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THE STOMACHS OF CATTLE,  
Cut open so as to shew their interior structure :  
FROM MULLER.



1. The entrance to the first stomach, the part above being the *oesophagus*, which has a hole cut in its side, through which a rod is passed into the paunch.
2. The outer coat of the *reticulum*.
3. The outer coat of the *oesophagus*.
- 4 *a*. The interior of the *rumen*, or first stomach, shewing its irregular surface, so apparent in what is called double-tripe.
- 4 *b*. The lower sac of the *rumen*.
- 5 *a*. That part which partially divides the *rumen* into two compartments.
- 5 *b*. Transversal bands which divide the *rumen* into other compartments. On each side, the outer coat of the *rumen* may be seen.
8. The internal surface of the *reticulum*, or second stomach, resembling a honeycomb.
9. The entrance from the second to the third stomach.
- 10, 11, 12, 13. The *manipulus*, or third stomach, shewing the various plaits or folds on its internal surface.
14. The internal surface of the *abomasum*, shewing its longitudinal plaits.
15. The pyloric orifice, leading to the *duodenum*, having a sort of valve to prevent the food returning.
16. The *duodenum* cut open, and shewing the place where the biliary and pancreatic ducts enter it.

A  
COMPENDIUM  
OF  
CATTLE MEDICINE;  
OR,  
PRACTICAL OBSERVATIONS  
ON THE  
DISORDERS OF CATTLE  
AND THE OTHER DOMESTIC ANIMALS, EXCEPT THE HORSE.



BY JAMES WHITE,  
LATE VETERINARY SURGEON OF THE FIRST OR ROYAL DRAGOONS.  
*5th Edition,*  
RE-ARRANGED, WITH COPIOUS NOTES AND ADDITIONS,  
BY W. C. SPOONER,  
VETERINARY SURGEON,  
HONORARY ASSOCIATE OF THE VETERINARY MEDICAL ASSOCIATION,  
AND AUTHOR OF  
A TREATISE ON THE INFLUENZA,  
AND A WORK ON THE STRUCTURE, ECONOMY, AND DISEASES OF THE FOOT  
AND LEG OF THE HORSE.

---

VENIENTI OCCURRITE MORBO.  
Learn to prevent the Diseases of Animals by proper Management.

---

2

LONDON:  
LONGMAN, BROWN, GREEN, AND LONGMANS;  
T. TEGG; WHITTAKER AND CO.; SIMPKIN, MARSHALL,  
AND CO.; HOULSTON AND STONEMAN; L. A. LEWIS;  
AND C. DOLMAN.  
1842.





there are now few extensive districts but what possess some practitioners who have devoted their time and attention to the study of the pathology of these animals. There yet, however, remains much room for further improvement, for the knowledge of the diseases of cattle still continues more limited than those of the horse. This is, in great measure, owing to the little attention that has been paid to the subject at the London Veterinary College; a circumstance which has been the subject of much and just regret, but which is principally, though not entirely, to be attributed to the fact that the subscribers to that institution have rarely any cattle in London, although many of them possess large estates in the country. It is to be presumed that this complaint will no longer exist, for lectures are now given on the anatomy of cattle and sheep; and Professor Sewell has lately established an infirmary, in connection with Flight's dairy at Islington, where a veterinary surgeon is in attendance, and cattle are treated free of expense. Mr. Sewell has been greatly assisted in this attempt by the English Agricultural Society, who have voted 200*l.* per annum to the Veterinary College, to be applied to the purpose of promoting the study, and disseminating the knowledge, of the diseases of cattle.

It is to be hoped that the English Agricultural Society will continue their laudable desire of improving the medical treatment of cattle, and that they will employ such means in carrying out their views as will not merely have the catch-penny



effect of putting their members in the possession of a few recipes for the treatment of particular complaints, but will place the study of the diseases of domestic animals on proper foundations, namely, those of science and experience; for the former without the latter will end only in vapid theory; and experience without science will produce no improvement in the art. While, however, the study of cattle pathology has not advanced as could have been wished, yet, to show that it has not altogether remained stationary, the Editor would respectfully point to the notes under Puerperal Fever and Red Water in the present work.

Considerable additions, it will be seen, are made to that part of the work devoted to the diseases of the Dog. On this head, although personal experience enables the writer to dilate, yet he would not be unmindful of the fact, that to Messrs. Blaine and Youatt the knowledge of canine pathology is principally owing. Although, as we have observed, considerable additions have been made, yet the character of the work itself is preserved. As a *Compendium* it was originally written, and as such it is still intended. This must form our apology for its faults; and where a want of sufficient amplification is complained of, the reader is respectfully referred to other more voluminous works.

W. C. S.

Southampton,  
Nov. 1841.



## PREFACE

TO

### THE THIRD EDITION.

---

My imperfect attempt to do something for the improvement of cattle medicine met with so favourable a reception that I have considered it as a duty I owed to an indulgent public, to continue my attention to the subject, and devote to it a considerable portion of my time. To accomplish the important duty I had undertaken, of improving the state of cattle medicine, I have been residing for nearly five years in a situation where many large dairies are kept, and where there are kennels to which dead cattle are often brought. This has afforded me ample opportunity of attending to the diseases of milch cows in particular, and of examining their bodies after death. I have been in a situation, also, where many flocks of sheep are kept, and have had opportunities of seeing a great deal of their diseases. To the disorders of working oxen, and such as are fattening, I have also paid attention, and hope that the observations I have made on those subjects will be found in some measure new, and altogether useful. I have likewise offered some remarks on the diseases of swine,—a subject that has hitherto been much neglected, though one of considerable moment. The disorders of dogs may be deemed of minor importance; but great loss is often sustained, especially in kennels, by one to which these animals



are subject, named distemper. The book will conclude with a consideration of the diseases of these animals, and those of poultry. I have endeavoured to compress the subject as much as possible, and hope that nothing superfluous will be observed; but conciseness, however desirable, is not always compatible with perspicuity, or a clear understanding of the subject. If, therefore, I have dwelt a little upon some things which appeared of more consequence than others, the reason, I trust, will be obvious. The milch cow, for example, is of far greater importance to society, than any other animal, except the horse, and the structure and economy of her digestive organs are peculiarly worthy of attention. The Essays which form the Appendix will be found, I hope, both useful and amusing, by all those who are desirous of improving the treatment of cattle, and ameliorating their condition. In conclusion, I would urge a rational and humane treatment of all domestic animals on the score of profit as well as justice, for it is the same with cattle as with horses—the interest of all proprietors to treat them with humanity.

*A righteous man regardeth the life of his beast. — Prov. xii. 10.*

“A man of kindness to his beast is kind,  
But brutal actions show a brutal mind.  
Remember He who made thee made the brute,  
Who gave thee speech and reason form’d him mute.  
He can’t complain; but God’s omniscient eye  
Beholds thy cruelty — He hears his cry.  
He was design’d thy servant and thy drudge;  
But know that his Creator is thy Judge.”

*Bath Herald of March 31, 1821.*

**PREFACE**  
**TO**  
**THE FOURTH EDITION.**

---

THE very favourable reception which the last edition has met with, determined me to use every exertion for its improvement; and I trust the reader will find that I have not been wholly unsuccessful. I have prefixed to this edition some observations on the dairy, which I hope will be read with interest; and I have annexed to it a translation of a French pamphlet on the method of managing milch cows, which I think will be found useful. It was written by two French Veterinary Professors of great eminence, and printed and published by the French Government, to be distributed to the dairy farmers in Paris and its vicinity. It has passed through several editions, and been translated into several languages. I thought, therefore, that an English translation of it would not be unacceptable to the purchasers of this little volume.



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# OBSERVATIONS

ON

## THE DAIRY.

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THE first object in the establishment of a dairy is to procure such cows as are most fit for the purpose ; and though there are various opinions as to the breed or sort that is most likely to answer, yet I think it will appear, after a careful inquiry into the subject, that this is a point which can be found out only by experience. That there are good and bad of all sorts is a point, I think, that will be conceded by all practical dairy farmers ; my advice, therefore, is to choose such cows as are of a tolerable size, and of a form and disposition well adapted for fattening, — a use they must be put to should they be found unprofitable as milch cows.\* If the dairy farm is in a cold, exposed situ-

\* It has been asked, at what age is it most desirable to purchase a cow ? I should think they should not exceed five, nor be younger than three years. My opinion is, that they are often, perhaps generally, put to the bull too early ; that is, that they are brought into the dairy farm long before they arrive at maturity. The Alderney cows take the bull much earlier than other sorts. The first calf is generally produced before they are two years old, and sometimes by the time they reach fifteen months, and although this may have some effect in limiting their growth, it is considered rather to benefit their milking properties. — Ed. This must certainly tend to weaken the constitution ; and though the

ation, I would advise a choice of such cows as are already inured to the climate, and the keeping up of the stock afterwards by breeding; but if the farm is in a more southern or sheltered situation, and consequently the pasture more forward and abundant, great caution will be found necessary in bringing stock from a colder climate, and less productive situation, into such comparatively luxuriant pastures. They should be at first put into the barest fields, and in the coldest situations; and if this precaution be duly attended to, the change of soil and climate will never be productive of mischief. But a sufficient time must always be allowed to enable the constitution to accommodate itself to the change. Writers on rural economy have generally divided the subject of the dairy in two parts, viz. the butter and the cheese dairy; and there are those among them who have endeavoured to make it appear that it is possible for the dairy farmer to excel in both these processes; a position which appears to me very questionable, not from any theoretical reasoning upon the subject, but from the plain matter of fact, that it is an object I have never yet seen accomplished. During the time I resided at Exeter, I found the butter excellent, but the cheese was the very worst I ever met with. Since I have resided in Somersetshire I have found the cheese excellent, and the

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effect of premature breeding may not be soon observed, it may be discovered in the progeny; and whoever persists in the system, if he clearly investigates the matter, will find in the end, I suspect, that it is far from profitable. It is generally thought that a cow is in perfection when five years old; therefore, I think, that is the latest period at which she should be purchased.

I think upon the whole that the farmer will find it most profitable to breed his own stock; and should he find this plan not to answer his purpose, it will be advisable to change his bull, for it is generally thought that the goodness of calves depends more upon the male than the female.

butter almost uniformly indifferent or bad. In speaking of the division that has been made in this subject by the various authors who have contributed their labours towards its improvement, I should have remarked, that besides the butter and cheese dairy, there is still another head under which it may be considered, and that is the milk dairy; for in the vicinity of large towns the demand for milk is so considerable, and the price so high, that the milk dairy alone might be found perhaps, in such situations, more profitable than either of the other two branches. An excellent dairy of this kind has been established by Mr. Harley of Glasgow, whose cow-house, it is said, is an object of curiosity to all who visit that city. The following account of Mr. Harley's dairy I shall take the liberty of transcribing from a useful little work lately published, entitled, "Practical Economy;" and it is but justice to the author to observe, that this little volume contains a great deal of useful and interesting information upon every branch of domestic economy. "When we saw Mr. Harley's cow establishment," he says, "it contained ninety-six inhabitants, each of which was confined to a post by a chain across her neck, of sufficient length to allow her, by means of a sliding ring, to lie down when she pleased. The cows stood in pairs, one before another, on each side of the cow-house, leaving a space of sufficient width for the attendants to pass backwards and forwards between them. Each pair has a grating before them, and the hay for the whole party is cut by means of a small steam-engine. The temperature is regulated with great exactness, the whole premises kept in the most delicate state of cleanliness, and the cows themselves regularly curried and rubbed down, which supplies to them the place of exercise, as they never go out except at a given period after the birth of their first calf, when



they are always sold, not being retained by Mr. Harley long enough to have a second; it will therefore be easily imagined that the quality of the milk must be as *desirable* to the purchaser as the *quantity* of it must be *profitable* to the proprietor.\*

“The milk is all sold in Glasgow; and to prevent its being adulterated by the people who take it out, the barrels which contain it are covered by lids, which have padlocks on them, and there is to each a lock-cock, by which the milk is drawn out. A large stock of pigs are also kept on the milk of this establishment, and twenty roasters are selected from them every Wednesday, and sold at half a guinea each.†

“By adopting the cleanliness and judiciousness of such of these regulations as may be practicable on a small scale, private family may keep a cow with less trouble and expense than are attendant on keeping a horse. Let it be kept in remembrance that the cows are profitable in all respects, not only in their present produce, but in their rearing calves for agricultural and dairy purposes, and in fetching nearly their first cost, when age requires they should be fattened for the market. In a moderate esta-

\* There must, I think, be some mistake in this statement; for though the milk after the first calving is generally, perhaps always, richer than at any period afterwards, yet I believe the quantity is generally, if not always, less.

† The largest milk dairy in England, perhaps in the world, is Laycock's dairy, Islington, belonging to the present proprietor, Thomas Flight, Esquire. It contains upwards of four hundred cows, which are milked by women at three o'clock in the morning and at noon. The cows are kept in stalls, and are well cleaned every day. Their diet consists of mangel wurzel, turnips, cabbages, carrots, clover, and grains.

There is a hospital attached to the dairy for the reception of the sick, who are attended by a veterinary surgeon. This hospital has lately been taken by Professor Sewell, and by him thrown open to the public.—ED.

blishment where several cows are kept, it will always be found that, after serving the family, the overplus cheese and butter will always pay the expense of keep, and go towards paying the first cost; so as to make the fattening of the cattle, when no longer fit for the dairy, an object of actual profit. This need not be doubted, when it is known that milch cows well housed will give nine gallons of milk per day for some months; and with care and judicious feeding will not fall much below that quantity for some time longer.\* Even the calves form an object in the scale

\* This account of the average produce of a cow will be found, I fear, over-rated. It is remarked in Rees's Cyclopædia, under the article Dairy, "that the average quantity of milk afforded by cows is very different, in different circumstances, depending materially on pastures, season, and the mode of winter keeping; but in the principal cheese districts, from eight to twelve quarts per day is the usual proportion, though many cows will give twice those quantities at a meal, for short periods. But when cows give more than the first of these quantities at a meal, it is remarked that they either go off their milk much sooner, or else their milk has less richness in it than that of others which do not give so large a quantity. The most accurate method of determining the produce, is to weigh the quantity of butter the cow is capable of producing in a given time. In the Lincolnshire Agricultural Report it is stated that eighteen quarts of milk are required to make one pound of butter where the hand churn is employed, and fifteen quarts with the horse churn. But in the accurate trials of Mr. J. C. Curwen, where oil cake in small proportion was made use of for feeding the cows, and the pendulum churn, constructed by Mr. M'Dougall, employed, eight wine quarts of the strippings, and nine quarts and a half of a mixture of the whole milk, were found to give a pound of butter. To make cows give abundance of milk, and of good quality, they must at all times be well supplied with good food; and it appears to me that the grass which springs up spontaneously on rich dry soils is the best. In such situations there is no danger of a cow gorging herself — a circumstance that often occurs when the artificial pastures or roots are made use of. Dr. Anderson says, that so little attention has been bestowed on this subject, that he does not know of any set of experiments that have ever yet been made, with a view to ascertain the effects of any of the natural grasses, which spring up spontaneously in our fields in abundance,



of saving. If thought necessary or expedient to take them from the cow at the earliest age, they may be easily taught

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either on the quantity or quality of the milk of cows; and few that have been attempted, even with regard to those plants which have been cultivated by art, as green forage for them; though it is well known that some particular kinds of plants strongly affect the taste and alter the quality of particular products of milk. It is indeed, he says, in all cases almost confidently asserted, that old pastures alone can be made to afford rich butter and cheese. This, however, he knows, from his own repeated experience, to be a popular error, as he has frequently seen much richer butter made by one person from cows that were fed in the house, chiefly with cut clover and rye-grass, than that which was made by others where the cows were fed on very rich old pastures. Mankind, he says, are in general disposed to throw the blame of every failure upon some circumstance that does not reflect on themselves as bad managers. Hence it is that the grass of a farm is often blamed for the want of richness in the butter produced upon it, when, if the circumstances were fully investigated, it would be found to be occasioned by the unskilfulness or carelessness of the dairy-maid, or want of attention in the choice of proper cows. It has been observed to be of great consequence to the produce of the dairy, that the cows should not drop their calves too early in the season; when that happens they fall off in the quantity of milk in the autumn, when, owing to its superior richness, it is more valuable than at any other time. From the end of March to the end of April is the best time in the more northern districts that a cow can drop in, as she soon gets in condition on the early grass, and yields a greater quantity of milk in the course of the season than those that calve either considerably earlier or later; but in the southern parts of the island it is an advantage to calve much earlier. In Cheshire, the above period is the usual time, only a few cows dropping their calves in January and February. It is a common practice in this district, at the period of the cows calving, for the cow-man, or the master of the dairy himself, to get up two or three times during the night to see that every thing is right. The racks, cribs, or mangers, are kept constantly clean, and great regard is paid to the appetites of the different beasts, in order that the quantity of food may be suitably apportioned; and after this, it is not an unfrequent thing for the master to walk from stall to stall before he goes to bed, that he may add or diminish the fodder in the manner that may appear necessary. It is considered in Cheshire, that fourteen or fifteen cows are as many as one dairy-maid can attend to, especially where both butter and cheese are made.

to drink a mixture of hot water and oatmeal, in the proportion of a pound of meal to four quarts of water, adding to it about three pints of skimmed milk; or they may be fed with hay-tea, containing one quart of flax-seed to every gallon."

This, however, must be practised only where the milk, on a careful calculation, thus saved, will cover the expense of the artificial food. Where cows, indeed, are very prolific, the extra calves must either be killed or fed in this manner. Where they come singly, it is not so much an object; but in many instances there are twins, or even more. A more extraordinary instance of fecundity in a cow than the following is not, we believe, upon record:—She produced in July, 1815, five calves; in May, 1816, three ditto; in March, 1817, three ditto; in May, 1818, two ditto; and in April, 1819, three ditto; making together sixteen in the space of four years.

Where amusement, more than actual profit, is the object in the choice of cows, the Alderney breed may be selected, their milk being so rich that their average produce of butter per annum amounts to about 200 lbs., or 200 gross weight; but their high price as milch cows, and low price with butchers when unfit for the dairy\*, are circumstances that must be taken into the calculation. As far as my experience and observation have gone, I have been led to give a preference to the Durham breed, not only on account of their being good milkers, but as being generally of good size, good tempers, and easily fattened when no longer fit for the dairy. This is the sort which seems to be preferred by those who supply the metropolis with milk.

\* As it is necessary in this calculation to consider every circumstance, I think that the comparative value of their hides should not be excluded from it.



In the various publications that have appeared relative to the management of milch cows, too much stress seems to have been laid on the quality of the food that should be given them, to the exclusion of a much more important circumstance; that is, the health of the organ which is to digest and assimilate the food. This has been a very common error, and has led to the opinion, that the lactiferous powers of the cow may be increased to a great extent merely by supplying the animal with that extra natural nutriment which is so abundantly found in the artificial grasses, and the various roots that are now getting into use. This, however, is a great mistake: the power of the digestive organs is limited; and if we give the animal such food as exceeds either in quantity or quality the power of the organ which is to assimilate it, we are sure to defeat the object we have in view. It is an observation sanctioned by long experience in the midland districts, that grounds which have been for a great length of time in a state of pasture, are capable of affording milk which abounds more in the oily principle, or that of cream; while those which have been laid down to sward for a shorter period are more productive of milk which has the curd or cheese principle in larger proportion. This observation is, I have no doubt, founded on the best of all foundations, that is, long experience; yet, if the reader will reflect a little, I think he will be inclined to admit that one circumstance has been overlooked in this calculation, and that is, the assimilative powers of the animal. An Alderney cow would, in such pastures, especially if sheltered from the cold, afford milk equal to the cream of some cows; but a hardy cow, of the long-horned breed, would afford, from the same pasture, milk that would abound more in the caseous or cheesy principle; such is the difference in the natural constitutions of cows. Now the former cow, in a

newly-formed or artificial pasture, would probably soon become surfeited, and have a bad udder, while the latter would thrive, and afford milk abounding in curd. It is not, therefore, the quality of the food only, but the constitutional power of the animal, that is to be taken into consideration. Another circumstance has been too little attended to, and that is the effect of climate on those cows of the southern breed. They will not do for bleak and exposed situations; and I am sure that every practical dairy-man will agree with me in recommending, for such situations, cows of a hardy constitution. It has been thought, and some experiments have been published in support of the opinion, that by a judicious use of the artificial grasses, and the saccharine and mucilaginous roots in winter, the produce of milk may be not only increased, but extended to a greater length of time; but a little reflection will show us, that in this, as well as in many other farming concerns, people want to take more out of a thing than it is capable of yielding; they want to kill the goose that has the property of laying golden eggs, in order to get them before the proper time. But in this, as in every other thing of the same kind, they are blind to their own true interest.

The richness of the butter made in the Highlands of Scotland is universally ascribed to the cows feeding upon the sweet and short pasture in the remote glens. This, I believe, is really the case; though some writers on the subject, and especially Dr. Anderson, seem to think that it is rather owing to their peculiar method of managing their cows; that is, they allow the calves to suck the first portion of the milk, which is the thinnest, and milk off the remainder for butter and cream. For my own part I cannot help thinking, that the proper management of milch cows is a very plain and simple thing. If we have a sufficient



extent of old pastures for them, very little reflection upon the subject is necessary; but, if we must have recourse to what is called artificial means, then it is that our skill in these affairs is brought into trial. In the natural pastures there is a great variety of herbage, and the animal is led to rove about in order to select such herbs as are most agreeable to her palate; in doing this she obtains such a degree of exercise and cheerfulness as is conducive to health and a perfect digestion; but, when allowed an unlimited quantity of this artificial food, it is a temptation that often proves too powerful: for in animals, as in men, we sometimes find inordinate appetites; and where the means of gratifying them are readily afforded, the consequences are sometimes fatal. It is not sufficiently known that, where there is this inordinate appetite for food, there is at the same time generally a morbid degree of thirst, and that by indulging the one, whichever it may be, we promote the other: in this way horses especially often load their bowels to an almost incredible degree. I am inclined to think, that by a judicious use of mangel wurzel and other nutritious roots, we may promote and extend the lactiferous services of the cow in a considerable degree; yet we should never lose sight of the important truth, that the stomach, as well as the lactiferous organ itself, or udder, are of limited power, and that the former must not be oppressed with an improper quantity of food, nor the udder with too much blood, however wholesome and nutritious the food may be. If we look to the subject of breeding in this animal, the following questions naturally arise:—What is the cause of difficult labours in the cow? How is it that the assistance of the cow-doctor is so often required to assist the delivery of the calf? Now the best book I ever read on this subject does nothing more than lay down rules for the method of extracting the calf, according to the de-

viation that it may have taken from its natural position in the uterus. But my view has always extended farther than this, and, I trust, ever will do so. I wish to discover the cause of the evil, and, if I succeed in this object, the remedy, or, rather, the mode of prevention, will be found at the same time. I have lately examined the body of a cow that died, I think, from over-feeding: when she was near the time of calving, she was kept in the field and liberally supplied with hay (in winter); she was found dead in the morning, and her death was attributed to her having fallen into a sort of hollow which was so inconsiderable, that, had her stomach been free from the load that was found in it, she could undoubtedly have got up again. I found the rumen, or paunch, weighing nearly 100 lbs., and the poor calf seemed to have been driven up into a corner and suffocated. I am decidedly of opinion, that the cause of the peculiar difficulty of parturition, or rather the frequency of it, in the cow, is owing most commonly to improper feeding: and, upon looking over an excellent paper on this subject in the sixth volume of a French publication, entitled "Instructions and Observations, &c. on Veterinary Subjects," I find myself amply borne out in this matter. Improper feeding will not only render calving difficult, but it will also tend to alter the position of the calf in the womb. And another important circumstance has been clearly proved, which is, that giving pregnant cows impure water is a more certain cause of abortion, or slipping calf, than any other. But, to return to the subject of milking, let us observe, in the first place, the intimate connection which exists between the fourth stomach and the udder. If the former becomes inflamed or disordered, the latter is sure to sympathize with it; and if the udder is materially injured, the stomach participates in the injury. This is another circumstance which should



induce us to be very careful in feeding milch cows whenever we are under the necessity of taking them from their natural pastures. When mangel wurzel was first introduced, considerable injury was done to many cows by giving it profusely. Sir Mordaunt Martin states, in the *Farmers' Journal* (1814), that "all Mr. Coke's cows that were fed upon mangel wurzel, and mangel wurzel only, for a few days, strewed upon grass land, in the same manner that turnips are given in some counties, were affected with palsy, and that some of them lost their milk; also, that as soon as the mangel wurzel was discontinued, they began to recover." In the same journal it is stated, by another practical farmer, that "when this root (mangel wurzel) has been given in large quantity, and without hay, it has in many instances caused a partial paralysis of the hind parts, the animals appearing as if they had been injured in the back:" and it is added, "Lord Crewe gave 60 lbs. a day to each milking cow, with a proper proportion of hay, not only with impunity, but with the best effect."

In another number of the *Farmers' Journal* I find the following statement:—"In the spring Mr. Birch gave each cow a bushel of mangel wurzel daily. A sweet flavour was soon distinguishable in the milk, the quantity increased, and the butter partook of the sweet flavour of the milk. The cows were very healthy, and remained so through the summer. The second year's crop was given in part to the cows as soon as taken from the ground, and the same improvement was observed in the milk and the butter, and likewise in the condition of the cows. As the writer (Mr. Birch) wished to save a pasture for mowing that season, he reserved the other part of the roots till the spring; and he found them in the month of May as sound as when first gathered, and they remained so until the cows had finished them. The latter end of June I gained my crop

of hay (he adds), had delightful May butter, and my cows had all the appearance of the highest state of health." On looking over several numbers of this valuable journal, I find many letters of a similar nature to the foregoing: but, lest I should tire the reader, I shall copy only two more. "On the morning of the 18th of October, 1814, two milch cows that had calved in the spring were turned into an over-eaten pasture, and fed every morning and evening with hay only. The milk was measured at each meal; the cream also was measured, and the butter weighed at each churning. The result was as follows for one week:—101 quarts of milk,  $5\frac{1}{2}$  quarts of cream,  $4\frac{1}{2}$  lbs. of butter. The cows remained in the same pasture another week, and were fed with mangel wurzel and hay, each cow having half a bushel sliced, and given to her every morning and evening: the following was the result for one week—130 quarts of milk,  $8\frac{1}{2}$  quarts of cream,  $6\frac{3}{4}$  lbs. of butter. The cows remained in the same pasture another week, and were fed with hay only: the result then was—87 quarts of milk,  $4\frac{1}{4}$  quarts of cream,  $3\frac{1}{2}$  lbs. of butter. The same cows with eight others have been feeding on mangel wurzel and straw for the last six weeks, and are all doing well."—The following letter is from Mr. Sibson:—

*Analysis of Mangel Wurzel.*

One thousand grains contained

Sugar	-	-	-	50 grains.
Mucilage	-	-	-	22
Starch	-	-	-	2
Extract	-	-	-	6
Woody fibre	-	-	-	35
Water	-	-	-	885
Total	-	-	-	1000



“From this analysis it appears that mangel wurzel contains nothing deleterious, but very much of a nutritive and most wholesome component. The quantity given to each cow in Ireland has been from 25 to 112 lbs. daily, not only with impunity, but with the best effects, both as to the dairy and in feeding of cattle for the butcher: it was accompanied, however, by a moderate quantity of hay, and in some by an intermediate feed of turnips. Mr. Pomeroy ordered three wheelbarrows full of this root, fresh pulled from the ground, to be thrown to his milch cows on a pasture ground. The food was so delicious, that they contended for exclusive possession, and the strongest having succeeded, she continued to devour the roots with avidity till all were consumed, and herself gorged beyond the possibility of recovery: but in this case, instead of paralysis, the same symptoms took place as from unrestrained feeding upon fresh clover. The rest of the cows have been fed upon the same diet, given in moderation, with a proportion of hay, and are in perfect health. The necessity of caution in the use of this root, also of clover, turnips, and aftermath, seems now fully established, and no injury need be apprehended when proper care is taken in feeding the stock. The value of mangel wurzel is now fully established beyond contradiction; and if due attention be paid to the soil, the seed, and the season, its cultivator will rarely be disappointed.” The following is added as a postscript: “According to Sir Humphry Davy, the nutritive parts in vegetables consist of sugar, starch, gluten, vegetable jelly, and extract; of these gluten is most valuable, next sugar, then starch, and last of all jelly and extractive matter.”

In several articles of the Swedish periodical work named *Amenitates Academicæ*, this interesting subject (food for cattle) is pursued with great spirit and high advantage to

the most important purposes of practical husbandry. The following tables are there given of the most agreeable kinds of food for cattle and other domestic animals, deduced from an exercise of that wonderful instinctive power of selection which enables them to crop those which are a nutritious food for their own species, and to reject the rest. By one of these tables it appears, of 494 species of indigenous plants of Sweden (three fourths of them common to our own country), which were offered to horned cattle, 276 were eaten and the rest refused. That goats, out of 449 species, rejected 126. Sheep, out of 387, would not touch 141. Horses turned away from 212 out of 262; and swine, out of 243, made choice of only 72. In the same interesting work we have a like series of experiments on a great diversity of insects and worms, with a view of ascertaining how many of them are devoured or rejected by our common poultry. This experiment seems to strengthen the opinion with regard to feeding the milch cow, with which we set out, namely, that no food, or manner of feeding, can equal the good old natural pastures, when milk, cream, and butter, are the objects of the dairy farmer. It has been stated, however, on very respectable authority, that butter, equally good and rich in quality with that produced on the old fertile pastures, has been afforded, while cows have been foddered in their stalls on cut clover, rye-grass, and other kinds of green food. It is of the utmost importance in the management of a dairy, that the cows be treated with gentleness, and soothed by mild treatment, especially when young and ticklish, or when the teats are tender, in which case the udder should be bathed with warm water before milking, and touched with a little of the best salad oil. They should then be milked with the greatest gentleness, otherwise there will be danger of their becoming stubborn and unruly. By some it is thought necessary always to wash



the udder with clean water before milking. It is a very general practice to milk cows only twice a day; but when they are abundantly fed with the artificial grasses, it is better, perhaps, to milk them three times a day during the whole of the summer season, viz. very early in the morning, at noon, and at night; for if milked only twice a day when liberally supplied with succulent and nutritious food, they will yield a much smaller quantity of milk in the twenty-four hours than if milked three times. It has indeed been observed by some attentive inquirers, that a cow in these circumstances will give nearly as much milk at each time of milking, if milked three times, as if she were milked only twice. This, however, is a statement which has not properly been submitted to the test of experiment. It seems, however, to have been clearly ascertained, that if the milk be not thoroughly off drawn at each time of milking, not only will the quantity of the produce of the dairy be diminished, but the quality also will be impaired. The milk that is left seems to be absorbed into the system, and nature generates no more than to supply the waste of what has been taken away; and by continuing this practice, the diminution of milk goes on, until no milk is formed. This is the practice which is pursued when it is intended to dry up the udder.

The following is the result of a series of experiments made by Dr. Anderson, a gentleman who has devoted much time and attention to the improvement of the dairy, and has distinguished himself not less by the care and attention with which his experiments were conducted, than by the candour and sound judgment with which he has reasoned upon them. These experiments are so simple and plain, as to be easily understood by every dairy-man.

*Dr. Anderson's Experiments.*

Having taken several large tea cups, exactly of the same size and shape, one of these cups was filled at the beginning of the cow's milking, and the others at regular intervals till the last, which was filled with the dregs of the strokings. These were each weighed, the weight of each cup being known, so that the quantity of milk in each was precisely the same; and, from a great number of experiments frequently repeated with many different cows, the result was in all cases as follows:—

The quantity of cream obtained from the first-drawn cup was, in every case, much smaller than that which was last drawn; and those between afforded less or more, as they were near the beginning or end. The quantity of cream obtained from the last-drawn cup, from some cows, exceeded that from the first in the proportion of 16 to 1. In other cows, however, and in particular circumstances, the disproportion was not quite so great; but in no case did he find it fall short of 8 to 1. In the next place, the difference in the quality of the cream was much greater than the difference in quantity. In the first cup the cream was a thin tough film; in the latter the cream was of a thick buttery consistence, and of a glowing richness of colour that no other kind of cream is found to possess: and lastly, the quality of the milk which remained after the cream was separated was, perhaps, still greater than either in respect of the quantity or quality of the cream. The milk in the first cup was a thin blueish liquid, like as if a large proportion of water had been mixed with ordinary milk. That in the last cup was of a thick consistence and yellow colour, more resembling cream than milk, both in taste and appearance. From this important ex-



periment it appears, the Doctor says, that a person, who by bad milking of his cows loses but half a pint of milk, loses in fact as much cream as would be afforded by six or eight pints at the beginning, and loses besides that part of the cream which alone can give richness and high flavour to the butter. In the second place, he says, that if milk be put into a dish, and be allowed to stand until it throws up cream, that portion of cream which rises first to the surface is richer in quality and greater in quantity than that which rises in a second equal portion of time; and the second more than the third, and so on. Thus the cream decreases in quantity and declines in quality, as long as any rises to the surface. It has been suggested, and I think very properly, that during the heat of summer, cows should be sheltered by suitable sheds, where they may be advantageously fed with tares, cabbages, turnips, potatoes, &c.; and it is probable that by indulging the animal in a little variety with regard to food, its health would be improved, and the formation of milk increased. Before I conclude this introductory article, I think the reader may consider the following experiment worthy of attention. A meal's milk of one cow was milked into five vessels of the same size, and then the milk was separately examined in each, in the order in which it was taken. The result was as follows:—

No. 1.	contained of cream	-	5 parts.
2.	-	-	8
3.	-	-	$11\frac{1}{2}$
4.	-	-	$13\frac{1}{2}$
5.	-	-	$17\frac{1}{2}$

To ascertain whether the quantity of curd, or cheesy matter, differed in like manner, he had a young and healthy cow milked clean into ten different vessels. The first

drawn was, as usual, the heaviest, and the last contained the most cream. After the milk was nicely skimmed, I found its weight in an inverse ratio. Now the first milked was the lightest, and the last the heaviest and richest in caseous matter; so that the milk obtained last is better also in regard to the quantity of curd. In situations where green food cannot be obtained in sufficient quantity, even in summer, it is of importance to inquire what kind of food may be most advantageously substituted for it. It has already been shown how profitable mangel wurzel has been found in this respect; and it would not be going too far, perhaps, were I to place parsnips next in the list of the nutritious roots fit for the milch cow. In Jersey this root has been used from time immemorial, not only for feeding milch cows, but for fattening them also; and it is said, that better beef or butter is not to be met with any where. If parsnips are sown in August, they will live over the winter; and thus an early crop may be obtained. Another method has been proposed for feeding cows when green food cannot be obtained, and is said to have produced a saving equal to three fourths of the food. It is by boiling, or steeping the hay in hot water, and giving the animal the water or hay-tea to drink, as well as the steeped fodder to eat. The advantages of this plan have been clearly demonstrated, upon a large scale, by that eminent agriculturist, Mr. Curwen, who cooks all the food for his horses as well as cattle by means of steam. The food he generally employs is, I believe, chopped straw, hay, Swedish turnips, and potatoes. I have seen somewhere a calculation of his of the daily expense of feeding each animal, and I do not think it amounted to more than  $5\frac{1}{2}d$ . I must now conclude this interesting subject by observing, that it is in this, perhaps, as in all other things, most profitable to follow nature as closely as we can; and as in the



natural pastures a great variety of herbage has been provided for the animal, it may be useful, perhaps, when cows are confined, to vary their food a little; and as there can be no doubt that exercise tends to the preservation of health, let the cows be made to walk about the yard, barton, or other convenient place, once or twice a day. It may be said, however, that cows, as well as horses, may, by perseverance, be brought to live upon food which at first their natural feelings would lead them to reject. This is in some respects true; and I now know a farm-yard where there is a pond, which is literally nothing more than the drainings of the yard and the dunghill, with the washings from the roof of the stable: yet habit has not only reconciled the palates of the horses that are kept there to this filthy water, but has even given them a relish for it; so much so, that if, when returning from a journey, the waggoner happens to stop at a nice running brook, near wells, to water, they refuse to drink unless very thirsty, and then they just sip a little, in order to moderate their thirst until they return to their delicious dung-water. I watched the progress of two oxen that were fattened in this yard on hay and potatoes, and to all appearances they became good beef; still I cannot help suspecting that this goodness was, in great measure, apparently only, and that such beef, when placed upon the table, was found very deficient in fine flavour, or at least inferior to the flesh of an animal that had been supplied with wholesome water. About a month ago a fresh cow was put into this yard, and it was really painful to watch the poor animal: for the three first days she scarcely ate or drank any thing. She seems now, however, to be in some measure reconciled to the water; and is so far improved in appetite as to eat 112 pounds of good hay in a week. Thus we see that necessity is a hard master, and will generally be obeyed in the end. But surely the cir-

cumstance of animals drinking or showing a preference for filthy water will never be adduced as a proof of its salubrity or utility. Lest any one should attempt to support such a position, I think it right to remind the reader of the improvement that took place in Mr. Dimmery's dairy, when he fenced round his ponds of filthy water, and had wells dug on his farm for the purpose of watering his cattle.\*

\* I had once the honour of spending a day with the late Dr. Jenner, that amiable and illustrious physician, whose invaluable discovery has proved such a blessing to the world. The Doctor condescended to converse with me on the diseases of cows; and informed me, that giving wholesome water to those animals was of more importance than the public is aware of. He told me there was a farm in the neighbourhood, where three or four farmers had sustained so much loss from abortions in their cows, from red water, and other diseases, that they were either ruined or obliged to give it up. The present occupier, after he had held the farm five years, and sustained great loss, suspected that the water they drank was the cause of the mischief, and therefore sunk three wells on different parts of the farm, and pumped the water into troughs for the cattle. The ponds were fenced round to prevent them from getting at the water, so that they drank only from the troughs. Since that time the farmer has not had a single abortion (termed warping in Gloucestershire), or one case of red water. His cattle have been free also from swelled udders; and, what is of great importance to a Gloucestershire farmer, he makes more cheese, and it is greatly improved in quality. The Doctor wished me to visit this farm, which I did, and another at a short distance. I found that the usual mode of watering cattle where there was no brook, or running water, was from a pit of stagnant rain, or spring water, to which the cattle had access by means of a sloping path on one side only. It has been observed that cattle, immediately after drinking, dung and make water; sometimes in the water, or close to it; and almost always before they leave the sloping path. The dung and urine, therefore, flow into the pond, or are washed into it by the rain, and make the water so impure that it has been found to kill eels, and nothing but noxious insects can live in it. The disgust which such water must excite in animals accustomed to drink from brooks is gradually overcome in a great measure, and they sometimes drink it without appearing to suffer; but the influence it has upon the animals' health is strikingly shown on this farm. On visiting the other farm, where the cows had been prevented from drinking this pond water only six months, the beneficial



However innocent filthy water may be, with regard to animals that are fattening or kept at work, one thing is certain, that it materially injures the quality of milk, butter, and cheese, and diminishes the quantity — that it not only often causes warping or slipping calf, but also engenders diseases, especially bad udders, red water, and scouring. As to the effect it may have on the flavour of beef, I believe it is a point that has not yet been inquired into. There is still one circumstance I have omitted to notice; and as it goes a little way towards supporting a point I have been endeavouring to establish, I must take the liberty of adding it. In speaking of the excellence of the butter made in the Highlands of Scotland, — which has been generally attributed to the sweetness of the pastures in the remote glens, where their cows are for the most part fed, and by Doctor Anderson rather to their peculiar method of milking; that is, they let the calves suck off the first portion of the milk, which is thinnest, and apply the remainder to the purposes of the dairy, — I should have observed this method was found to fail, on trial being made with one cow, and the circumstance was related to me by the person who witnessed it. After a little time it was found that the cow let down the richest portion of her milk to the calf, and that what they milked off afterwards was quite as thin as the first portion is found in the ordinary way of milking.

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effect of drinking wholesome water was sufficiently obvious to demonstrate its utility. Before that time, they were frequently meeting with red water and swollen quarters, *i. e.* a swelling of a part of the udder; but since the cows had drunk pure water, not one case of either had occurred. Since my return to Oak-hill, which was only yesterday, I have heard of a farmer at Whitchurch who has discovered that giving his cows wholesome water is essential to their health, and to the goodness of their milk, butter, and cheese.

A  
COMPENDIUM  
OF  
CATTLE MEDICINE.

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INTRODUCTION.

No one can be competent to prescribe for cattle without a careful examination of the sick animal, and an accurate notice of the symptoms of the disorder, and the effects of his treatment. It is too much the practice for druggists to dispense medicine to cattle without seeing the patient, or without having ever seen an animal labouring under a similar disorder. They are, in general, totally ignorant of the subject; and their only pretensions are the possession of certain recipes for certain disorders, which they never saw, and perhaps never wished to see.

Most of the important disorders of cows and oxen may be divided into three classes. The first is caused by feeding too greedily upon clover or common grass, especially in the fall of the year, when grass is abundant, and the mornings become frosty. The second class depends upon an accumulation of excrement in the third stomach, and a derangement of the digestive system. The third class depends upon repletion of the blood-vessels. Disorders of the second class generally occur late in winter, or in spring; those of the

third in summer ; and those of the first, as I have before stated, in the autumn, after the wet weather has set in. At this period the grass becomes abundant, and less nutritious than in the spring and summer ; and then the animal often loads its stomach, and becomes hoven, or blown, or what is called *fog sickness* takes place. When a cow becomes ill from an accumulation of food, or rather excrement, in the third stomach, there is costiveness, loss of appetite, loss of the cud, swelling of the udder, bad milk, and a variety of symptoms, which nothing but personal and careful observation can enable the farmer to distinguish. These diseases are very common at the time I have mentioned ; and such are the diseases in which the drenches of cow-doctors and druggists are given without doing mischief, and sometimes with good effect. But in the inflammatory class of diseases their drenches are poisonous ; and there is not one in a thousand that knows how to treat them, though the treatment is extremely simple. In these diseases, therefore, the animal generally dies. The symptoms of internal inflammation, or fever, are quick breathing, hot horns and ears, and clammy lips ; the blood-vessels of the white of the eye distended or full, but seldom any redness of the internal surface of the eyelids, as in the inflammatory disorders of the horse ; hanging of the head and ears, and dejection of countenance ; quick and hard pulse, often exceeding one hundred in a minute. Now, in distinguishing inflammatory diseases, the season of the year, the kind of pasture they are in, the milk they have given, or the number of calves they have had, and their age, are circumstances that must always be taken into consideration. A young cow or heifer, for example, that has not been removed from her native climate, has a strength of constitution, which in an old cow that has had many calves, and especially if she has been what is called a free and good



milker, is nearly worn out. The treatment, therefore, must be adapted to circumstances. A young healthy cow, affected with an inflammatory disorder, will bear the loss of two gallons of blood; but in cows of the latter description it will be necessary to bleed with caution.\*

\* From an examination of the anatomical structure of cattle, it is found that their digestive organs are very largely developed. Four separate stomachs besides the bowels are furnished for the perfection of the process of digestion, and the whole abdominal viscera are of comparatively predominant importance. The capacity of the chest is less than in the horse, and the organs of locomotion are more imperfectly developed. The brain too is less, and the whole nervous system more feebly constituted. In the cow we find a structure eminently calculated for supplying a superabundance of milk; and thus the principal use of the animal to man is marked out by its structure, viz. to supply him with food in the forms of beef and milk. The diseases of cattle closely correspond to their anatomical and physiological arrangement; and whilst the lungs and air passages, unlike those of the horse, are rarely much affected, the abdominal viscera are the seat of the principal and most frequent diseases to which this animal is liable. The stomachs are not only in many cases the particular seat of disease, but also are generally deranged in their functions when other organs are impaired. The most common symptoms of various distinct diseases are a suspension of rumination and a torpid state of the first and third stomachs.

The brain and nervous system are, it has been remarked, comparatively feeble in the ox. He does not possess the same nervous energy that enables the horse to endure toil and fatigue, and even to bear up against pain and disease; and consequently one of the first symptoms in the greater number of diseases in the ox is that he lies down, for loss of strength supervenes more speedily than in the horse. He is subject perhaps more frequently than the solipede to disease of the nervous system; but whilst in the former these affections are of an irritating nature, as tetanus or locked jaw, in the latter animal they arise from want of strength, and are of the nature of palsy, as in the *drop* after calving.

These general considerations of the comparative structure and function of these animals should be borne in mind in our treatment of disease. For instance, in many maladies of the horse it is dangerous to excite the bowels in any considerable degree; whilst there are few diseases in the ox but what require a purgative, and often combined with a powerful carminative to excite the action of the torpid stomachs.—Ed.

The blood of cattle is naturally thinner than that of horses, and their nervous system weaker; this is more particularly the case when the former are in the state above described. It is rather extraordinary that the pulse of cattle has never been attended to. I have never seen it noticed in any French or Italian work on veterinary medicine; and I have known an English veterinary surgeon of great experience in the disease of cattle, upon being asked the question, say, that the pulse of cattle was the same as the horse's pulse as to the number of pulsations in any given time; whereas after a careful inquiry into the subject I found that the pulse of cows is from 50 to 60 in a minute, and when near the time of calving 90 or more; while the pulse of the horse is under 40.\* This I consider a confirmation of what I have before observed, viz. that they have a weaker nervous system than horses.

I am of opinion that the draining of land, which has become so general of late years, has greatly contributed to the preservation of the health of cattle, and would have done much more had proper attention been paid to them in regard to food and water. There is a small field adjoining the moat which surrounds the Bishop's Palace at Wells, which has always been injurious to the health of cattle. This can only depend, I think, upon the cold fogs that must happen there, and a predisposition to disease in the animals that suffer. I should have remarked also, that there is a stream of water constantly running through part of the field, and that the pasture is good. To prevent the diseases which so often happen in the rich meadows adjoining rivers is not, I think, difficult; though it requires some labour. It can

\* The pulse of cattle is much more frequent than in the horse, and may be considered to range from 50 to 55 in a state of health; but is quicker in milch cows than in oxen, and particularly towards the period of parturition. — Ed.



only be accomplished by giving them as much water as may be found useful, and driving them to some higher situation, where there is only moderate or rather bare pasture, every evening. With regard to the quantity of water necessary, I have to observe that at one farm in Gloucestershire, where the land was good, and cattle had free access to ponds, three farmers were nearly ruined by the bad luck, as they termed it, which they had with their cattle. The fourth who occupied the farm sustained great losses for about three or four years, when, thinking that the water might be the cause of the evil, he fenced off his ponds, and pumped water for them into troughs; after this he sustained scarcely any loss, and the quantity and quality of his cheese and butter were greatly improved. As to the proper quantity, I would advise the farmer to ascertain that point by attending to the appetites of his stock; and having ascertained this, he may gradually diminish the allowance of such as are immoderate, and allow them only clean water. I once communicated a circumstance to the Bath Society which appeared to excite some attention. A piece of good grass was reserved for some cattle, as they had work to do in some adjoining land. When turned in they were soon after attacked with violent scouring. Thinking the grass was the cause, they were put into some other pasture, where there was no water, on which account they were driven back to the former field to be watered, no suspicion being entertained of the water in that field being unwholesome; on the contrary, it had always been considered very good, being a pond of spring water. The scouring, however, increased; they voided blood with their excrement, and were greatly reduced in flesh and strength. Upon examining the pond an immense number of different kinds of reptiles were found in it. A considerable quantity of lime was thrown

in and stirred about in the pond; on which an astonishing sight soon presented itself,—millions of reptiles were seen coming to the surface, and leaping about to escape from the almost boiling water. After some time the pond was cleared out, and two or three wheelbarrowfuls of various kinds of reptiles were found in it. When the pond had again filled, the cattle were put back into the field, and soon recovered from their scouring. A curious circumstance is related in the *Medico-Chirurgical Review* for Sept. 1824, page 267., which proves that worms, or their ova, may be taken into the stomach with water. An infatuated woman was persuaded that if she got some clay from the grave of a preacher who had died a short time before, mix it with water, and drink a certain quantity of such water daily for a certain period, she would be secure for ever after both from disease and sin. Dr. Pickle was called upon to attend this woman. He says, “Of the larvæ of the beetle I am sure I considerably underrate it when I say that, independently of above 100 evacuated by stool, no fewer than 700 have been thrown up by the stomach at different times since the commencement of my attendance. The first discharge took place after a violent mental emotion, and was preceded by a discharge of blood from the mouth, nose, and ears.” “We cannot attempt to describe (the reviewers say) the various insects in all stages of larva, pupa, and perfect animal, minutely detailed by Dr. Pickle, and represented in the plates. The Doctor and other medical gentlemen were frequently witnesses of the ejection of these animals, and there appears no reason whatever to suspect any disposition to imposture on the part of the patient.” It is afterwards stated, that “for a period of three months a great number were thrown up from the stomach almost daily, in some instances to the amount of 30 at a time. A great proportion were destroyed from an anxiety



to avoid publicity, and many escaped immediately after being vomited by extricating themselves quickly from the vomit and running into holes in the floor. Upwards of 90 were submitted to Dr. Thompson's examination, nearly all of which, including two of the specimens (*terebris molitor*), I saw myself thrown up at different times. The average size was about an inch; many, however, which I measured were an inch and a half in length, and four lines and a half in girth. The larvæ of the dipterous insect, though voided only seven or eight times, came up almost literally in myriads; they were alive and moving. The larvæ of the beetle were vigorous in the extreme; nor was it possible, without a feeling of horror, to view them frisking along the bottom of the vessel in which they were preserved, occasionally expanding their jaws, and extending their denticulated feet. Mr. Clear, of this city, has succeeded in keeping some of them alive now, after an interval of a year, in little pots filled with clay, and so secured as not to exclude the air." There is a circumstance very little attended to by those who have ponds in their fields, though it is an object of some importance; that is, they are in a situation where a great number of dead leaves must of necessity fall into them from the hedges or branches of trees which hang over them. This renders water very impure, especially the leaves of the ash tree. It is the opinion of some French veterinary writers that small insects which have a blistering quality, like cantharides, are found on the leaves of the ash tree; and if they fall into water and are drunk by cattle, very severe disorders are produced. However this may be in France, there is no reason, I believe, to apprehend that there is any insect of the kind on the ash trees of this country. Another way in which the water of ponds is made impure is by the excrement of the animals themselves falling into the water, or on the slope which leads to



it, while they are drinking; for they seldom fail of voiding it when they drink, or immediately after as they turn round to leave the pond. When water is pumped up from wells, the troughs for receiving it should be made of stone; for when water stands long in wooden vessels it acquires an offensive smell and taste, and after some time small worms are seen swimming about in it, especially in hot weather. But it is not unlikely, I think, that by properly coating the inside of wooden vessels with a suitable composition, they would be made fit for the purpose, as the decomposition of the water would thereby be prevented.

There is a period when it is advisable to give up milking a cow; and this period is generally made known by a gradual obliteration of the quarters, as they are termed. This process generally begins in one quarter, and in a short time spreads to the other on the same side. Thus the process of obliteration is going on in both quarters of one half of the udder at the same time. Cows at this age should be kept at grass, in short sweet pasture, which will give strength to the digestive organs, and enable them to acquire fat without danger of inflammatory disorders when they are turned into better grass, or put up for stall-feeding.

The fattening of calves and lambs is a subject of importance, and may be conducted with greater certainty than it now is by careful attention to the state of the stomachs. When the cow's stomachs are disordered, the milk is bad, generally, in one quarter only; and if the calf sucks this teat, its stomach becomes disordered in a degree proportionate to the bad quality of the milk. However good the milk may be, it will, if not prevented, often suck too much at a time, and thereby load the stomach: a repetition of this excess will establish a disorder in the calf's stomach. The same observation applies to lambs; but it should be observed, that the cow was evidently designed to

furnish milk for man, as well as for her own young, and that this excess is more likely to happen to calves than to lambs. To fatten lambs early, that is, about Christmas, it has been found a good plan to confine them, and let them suck the ewes only twice a day; but in the intervals they have barley or oatmeal placed before them, mixed with a small quantity of powdered chalk, to correct any acidity that may take place in the stomach. This plan has been practised with great success by Mr. Cooper, of the White Hart, Bath. With regard to the fattening of oxen, we should always attend to the state of the digestive organs, and bring them to a healthy condition before they are put into good pasture. To accomplish this, they should be placed in a situation where the pasture is rather bare, that they may be obliged to feed slowly, and have sufficient exercise in obtaining their food. There are other circumstances to be attended to in the process of fattening cattle, and other domestic animals that are employed for food, which will be noticed in a separate article.

## CHAPTER I.

STRUCTURE AND ECONOMY OF THE DIGESTIVE SYSTEM OF  
THE COW.

OF all the diseases of cattle and other domestic animals, there are none of so much importance as those of the stomachs and bowels. I shall therefore begin this treatise with some observations on the structure and functions of these organs in cattle and other ruminating animals, because there are some curious peculiarities in the digestive system of these animals, of which it will be useful to obtain a knowledge.

*Of the Stomachs.*

There are four stomachs in the cow, three of which have internally a cuticular covering by which their sensibility is considerably diminished; but the fourth is covered with a highly sensible and vascular mucous membrane, which secretes the gastric juice; and it is in this stomach that the most important part of the digestive process is performed. The first stomach is named the *rumen*; the second the *reticulum*, the *cellular* or *honeycomb* stomach, and by the French termed *le reseau* and *le bonnet*; the third the *manipulus*, or *foliated* or *leaf stomach*. The fourth stomach is named the *abomasum*, and by the French *la caillette*, which signifies the curdling or coagulating stomach; a term which in the sucking calf would be very proper, because the milk that is taken in goes immediately to the fourth stomach, and is always coagulated, but in the cow it would be better to name it the *fourth* or *true stomach*.



*The Rumen.*

This is a very large muscular bag or reservoir, lined externally by a membrane named peritonæum, and internally by a cuticular or insensible membrane, similar to that which lines the œsophagus, and about one half of the horse's stomach. It is of an oblong form, is situated obliquely in the cavity of the abdomen, and when filled (that is, as we find it in cattle that are slaughtered without any previous fasting) it occupies about three fourths of that cavity.\* It is necessary to bear this circumstance in remembrance, as it may enable us perhaps to account for the frequency of abortion and difficult parturition in cows. (See ABORTION and CALVING.) On the cuticular or internal surface of the rumen there are innumerable small processes or eminences, which it is difficult to describe: this, however, is not necessary, as it may at any time be seen by purchasing a pound of tripe; the same may be observed with regard to the internal surface of the second or cellular stomach, which

\* The following excellent description of the first stomach is given by Mr. Youatt, of the Veterinary Medical Association:—"The *rumen* or paunch is an enormous viscus. It occupies nearly three fourths of the abdomen, and contains the food during the interval of time between its first and second mastication. It is divided into two unequal compartments, a superior and an inferior one; the superior one occupying the left portion of the abdomen, and extending to the flank, and even to the pelvic cavity; the other sac situated in the anterior portion of the abdomen, but the mass of intestines occupying this part of the cavity being interposed between it and the right flank. Internally these compartments are divided into smaller ones by means of strong muscular transversal bands. The rumen has three distinct coats; the peritoneal, muscular, and cuticular. All the transversal bands or divisions consist of duplicatures of the muscular coat. The inner is a cuticular coat covered with innumerable papillæ, of different size in different parts of the stomach, and particularly large in the centre of the different compartments."—ED.



may be readily known by the resemblance it bears to the cells of the honeycomb. The foliated or third stomach is never used as food, but is given to dogs or pigs. The fourth stomach may be distinguished in tripe by its dark colour; but its beautiful structure can only be correctly known by an examination of the entire stomach before it is boiled. A horse in feeding masticates the food sufficiently before it is swallowed; but the cow swallows her food in a more gross or coarse state; and having filled the rumen sufficiently, she lies down to ruminate. The pharynx and œsophagus of the cow are much more capacious than that of the horse, which enables her to swallow a much larger and coarser morsel. When the œsophagus arrives at the first stomach, it is continued forward to the second and third stomachs in an open state, or like a shoot; but the animal seems to have a power of closing it occasionally, so as to convey the ruminated morsel immediately to the third stomach, and liquids to the fourth stomach.\* On ex-

\* "The œsophagus," observes Mr. Youatt, "enters the thorax on the left side of the trachea, and pursues its course between the laminae of the mediastinum, and passing through the diaphragm approaches the stomachs. It has somewhat diminished in size in the thorax; but as it approaches its termination in the abdominal cavity it expands, and becomes more muscular on its upper or posterior side, and less so on its lower or anterior side, and the fibres assume a longitudinal direction; in fact, it terminates in a kind of funnel, or is the commencement of a singularly constructed canal, its roof being formed of a continuation of the œsophagus, and its base of two firm muscular pillars. This canal varies in length from two to nearly twice as many inches, and conducts to the entrance into the maniplus or third stomach. These muscular pillars are duplicatures of the roof of the first and second stomachs, the rumen and the reticulum, which lie immediately beneath. When they are distended by the action of the muscles at their two extremities, the edges become so closely fitted to each other, that fluids descending from the œsophagus with little force pass over them and enter the abomasum through the maniplus: when they are relaxed, the food descends into the rumen, or ascends from the reticulum."—ED.

aming the outside of the rumen we find in some parts strong muscular bands, which, by contracting, appear to divide the cavity into different compartments; and it seems probable that it is by means of these bands, together with a gentle contraction of the muscular fibres of the other parts of the rumen, aided by the contraction of the abdominal muscles and diaphragm, that the food is forced back into the mouth to undergo a perfect mastication. It has been supposed that the numerous small eminences with which the internal surface of the rumen is lined secrete some fluid necessary to the preparation of the food; but they may only be designed as a defence against the coarse fibrous parts of the food.

#### *The Cellular or Second Stomach.*

The internal surface of this stomach is something like the cells of a honeycomb, but rather irregular in form and size; and at the bottom of each cell we may observe minute subdivisions. The whole surface is covered with little eminences like minute pimples, which probably secrete some fluid to be mixed with the ruminated morsel before it passes into the fourth stomach. At the part where this stomach communicates with the fourth, instead of the small eminences just described, we observe a sort of net-work or long spine-like processes stretching out, which seem to act as a grate or strainer, keeping back any hard bodies that may have been swallowed. It is remarkable that it is in this stomach only such things are found, and never, I believe, any other, except hair balls, which appear to be formed in the fourth stomach. Pins and even nails have been found in the cellular stomach, according to Chabert and Girard. I have found small bits of wood or stick, which had been kept back, and were entangled by the grate-like processes



before described. The capacity of the second stomach is about seven or eight inches in diameter; it seems to be designed as a receptacle for the more fluid parts of the food or water, and to moisten and otherwise press on the ruminated morsel from the third stomach.\*

*The Foliated or Third Stomach.*

This stomach, when full, approaches to the globular form; but when the animal is killed after fasting twenty-four hours or longer, a practice often adopted by butchers, it bears some resemblance in form to a kidney. It may be considered as a strong muscular bag, supplied internally with numerous leaves, between which the food passes to undergo a further preparation. These leaves are covered with small processes of various sizes, and somewhat different in form; some of them are of a conical form, not unlike the spines or prickles of the bramble or dog-rose: all these processes are supposed to supply some liquid necessary to the preparation of the food.†

\* "The reticulum or honeycomb is the smallest of all the stomachs. It is composed of the same coats as the rumen; but there are two layers of muscles beneath the peritoneal coat, the one running longitudinally, the other transversely; consequently they could, by their united action, press any yielding body contained in it into the smallest possible compass. The cuticular coat takes the form of a vast number of pentagonal cells, like a honeycomb, but shallower; and along the base and sides of which are numerous papillæ or secreting glands, which secrete a mucous fluid. This stomach has but one opening, communicating, according to the state of the œsophagean canal, either with it or the rumen."—YOUATT.

† "The manifolds," observes Mr. Harrison, in the sixth volume of the *Veterinarian*, "by its internal labyrinth-like form, secretion being performed in it by a number of follicular glands distributed throughout the whole of its cuticular surface, is intended for the retention of food within its cells, until it is brought into a more pulpy state, and fitter to be acted on by the abdomen. Had nature not given to it that strange peculiarity of structure which distinguishes it from the other stomachs,

*The Fourth Stomach.*

In this stomach the preparation of the food is completed, and it is gradually changed into a substance named *chyme*; from this substance *chyle* is separated as it passes through the small intestines. The chyle is absorbed by the lacteals, and conveyed to the thoracic duct, from whence it passes into a large vein near the heart, and mixes with the blood. The internal surface of the cow's fourth stomach, by which the gastric juice is secreted, is much more extensive than that of the horse, and this is accomplished by its being thrown into large plaits or folds; its external surface is smooth, like that of the other stomachs, and is of considerably less extent than the internal surface. The bowels of a cow are from 50 to 60 yards in length; the last I measured was 55 yards: but the horse's bowels, though only from 30 to 35 yards long, are much more capacious.

*Rumination, or Chewing the Cud.*

During this process a quantity of saliva is poured out by the different glands, proportionate to the dryness of the food: according to Chabert, no less than from three to four

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but left it a simple hollow muscle, the food would have passed on in an uninterrupted manner towards the abomasum and intestines, and the process of digestion would have been greatly accelerated; but this acceleration of so important a function would have been gained at an immense sacrifice of food; for the ruminants would necessarily have had to take in a larger quantity of food in a given time, in order to produce an equal proportion of nutritive matter." Mr. Harrison supports this view of the case by relating two instances of cows taking more than double the usual quantity of food without any increase either of flesh or milk; and on examining them after they were slaughtered, the internal surface of the rugæ of the manifolds was considerably less developed than is usually the case.—Ed.



pints during the time a cow is eating a bushel of dry bran. This not only facilitates mastication and swallowing, but may assist also in the ultimate part of the digestive process, that is, the conversion of the food into chyme, which takes place in the fourth stomach. When the morsel which has been forced up from the rumen has been perfectly masticated, it is again swallowed, and conveyed to the second or cellular stomach, from which it passes into the fourth stomach, after undergoing a further preparation.\*

\* On the subject of rumination, we cannot do better than introduce the following excellent and novel views of Assistant-Professor Spooner, as given to the Veterinary Medical Association:—"Previous to the animal having partaken of solid food, the three first divisions of the stomach are strangely small when compared with the fourth, which is largely developed. At that period the animal lives entirely upon fluids; therefore we can scarcely err in coming to this conclusion, that in the natural process of digestion it was intended that fluids should pass at once into the abomasum. On the anatomical investigation of this organ, we find that there extends from the termination of the œsophagus a smooth passage or canal over the reticulum, and through the maniplus into the fourth stomach. The base of this passage is formed of two projecting muscular pillars, the contractility of which, he believed, was under the influence of the will; so that when their edges are brought together they form a distinct channel, by means of which fluids pass on to the abomasum without entering either of the other stomachs: yet he could conceive that the act of deglutition might be much altered by long deprivation of water and considerable thirst, and the animal swallowing with more than usual effort, that the stream may fall with so much force on these pillars that they will be forced asunder, and the fluid will fall into the rumen.

"As to the return of the food for remastication, he agrees with Mr. Youatt, that it first proceeds from the rumen to the reticulum. Viewing this stomach, he is struck with the smallness of its size, and its great muscular power. It is an organ well adapted to receive the food, to gather it together, to grasp it, and press upon it, and by these means to squeeze from it the greater part of the fluid and sufficiently comminuted ingesta which it contains. This flows back into the channel, and passes on to the third stomach; but those portions which are not sufficiently fluid, the rough materials, are formed into a pellet, ejected into the œsophagean canal, grasped by the muscles at the base of the œso-

*Of the Udder.*

If we examine the udder of a milch cow that has had two or more calves, we shall find it composed of cells of

phagus, and carried up that tube to the mouth in order to be remasticated. It is then again swallowed.

"In the second act of deglutition does the food pass into the fourth stomach or the first? The perfectly fluid parts will first descend the œsophagus, and pass on into the fourth stomach; but the harder portions of it will again break through the floor of the canal, and fall into the rumen, there to await another, and perhaps another mastication.

"The office of the third stomach is to arrest any fibrous portions which may remain in the fluid matter pressed into it from the reticulum on descending the œsophagus, and by its peculiar laminated and papillated structure, to render it pultaceous, and fitted to mingle with the contents of the abomasum. This last is the true digestive stomach. It secretes the gastric juice, and its surface is increased by numerous extensive folds or rugæ.

"Does he find the contents of the rumen of that coarse nature of which they are generally described as consisting? No! He had examined many, and he has always found a large quantity of pultaceous matter and much fluid there; and he has been often obliged to tie the œsophagus, in order to prevent the fluid from running out through the mouth from this division of the organs after death."

Mr. Friend, in an excellent paper on the stomachs of ruminants in the sixth volume of the *Veterinarian*, relates the following experiment:—"I procured leave from a butcher to administer linseed and water to various ruminant animals just before they were to be killed, and then examined their stomachs directly after; and the result was as I expected, that the greater portion of fluids find their way at once into the rumen; and as it is not at all necessary that they should reascend the œsophagus, they again flow off by the passage to the abomasum, taking with them all such portions of the food as are sufficiently comminuted to proceed to immediate digestion."—In order that the process of rumination should go on, it is necessary that both sacs of the rumen should be nearly full. "This," observes Mr. Lucas, in the eighth volume of the *Veterinarian*, "has been proved by experiment. A sheep was kept without food for several days, and when killed the right sac of the rumen was found full. Other experiments have proved that it is rarely that the food begins to be returned to be remasticated in less than sixteen or eighteen hours, and that the return is not perfectly ac-



different sizes, becoming larger as they approach the teats; but the udder of a heifer, immediately after her first calving, has a very different appearance. There is a small portion of cellular structure towards the teats; but the other parts have rather a granulated appearance, and by pressure yield milk from innumerable pores.\* In a cow that has had several calves, we find two large veins proceeding from the udder, and passing up under the belly. These are remarkably large when the udder is full of milk. On examining cows that die with a good deal of milk in the udder, we find in this vein a mixture of milk and blood, and sometimes the blood appears rather oily. These veins are commonly named the milk-veins by dairymen, and I was once inclined to believe that they really were milk vessels; and from the large cells of the udder, I thought it appeared more like a reservoir or receptacle for milk than a glandular structure for secreting it. But after examining the udder of a heifer, immediately after her first calving, it certainly had a glandular appearance, as I have before noticed; and upon looking for the milk-veins, as they are termed, I could not find any thing of the kind. There is an intimate sympathy between the fourth stomach and the udder; for whatever disorders the fourth stomach will disorder the udder, and spoil the milk in one or more of

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completed in less than double that time. It is therefore not the food that has just been swallowed that the cow ruminates, but that which has been macerating in the lower sac of the rumen for twenty-four hours upon the average."—Ed.

\* The mamillary glands of the cow are composed of two parts united together by cellular tissue. These are divided into two other portions, which are also connected in a similar manner; and from each of these glands or quarters many tubes proceed, which unite to form a common excretory canal, opening outwardly by means of the teat.—Ed.

the quarters: hence we may see how important it is to attend more than is commonly done to the manner of feeding cattle. The udder is said to consist of four quarters, each quarter having an excretory duct or teat, at the extremity of which there is a contrivance for confining the milk, but in a limited degree; for if the milk be suffered to accumulate in the udder by neglecting to milk at the usual time, or by muzzling the calf, as we often see in the market, it will at length force its way through the teat, and be seen passing off in drops, or a small stream.

Having now given such a description of the stomachs, the bowels, and the udder, as may render the observations I shall make on some of the diseases of the cow more intelligible to the reader, I will proceed to make some remarks on the manner of feeding.

#### *On Food and Water.*

Attention to the quantity as well as the quality of water given to cattle, is a matter of more importance than it is commonly considered to be; and I am convinced that if calves, as well as cows, were limited in water, or had only a small quantity of water, it would tend to prevent the quarter-ill, red water, and scouring. When a calf or yearling heifer is put into rather bare pasture, through which a stream of water runs, it is not likely that it will drink more than is useful; but if the pasture is more abundant, it will probably eat and drink as much as will be injurious. If it has been accustomed to drink clean running water, and is put into a field of good pasture where there is only a pond of stagnant rain water to drink at, it will probably eat no more than will be beneficial, because it will not drink too much water. In rearing young



cattle it is of importance that they should have a sufficient quantity of wholesome food, especially in winter ; but it is equally necessary that they should have also as much exercise as is conducive to health and the growth of the various parts of the body, with as much water, and no more, as is necessary or favourable to digestion. In other circumstances, young animals, like young children, will continue eating when they should be using exercise, and after eating an improper quantity they feel unusually thirsty. Having drunk freely, an appetite for food returns ; and they are tempted to eat more, especially in good pasture, where they can get it without exercise. In this way they gradually acquire immoderate appetites, or are attacked with the quarter-ill. Older cattle that have thus or by other means acquired an immoderate appetite will also, when put into situations where they can indulge freely in food and water, soon form too much blood, by which the nervous system will be depressed, and consequently the strength of the digestive system, as well as of the whole body, will be more or less diminished. In this state they are susceptible of various diseases ; or, in other words, this state constitutes what in medical language is called *predisposition* to disease ; and improper management with regard to feeding and water may be considered as the *remote* cause of the diseases which may occur. It is a fact not sufficiently known, that when cows have been accustomed to drink filthy water, even the washing of a dungheap, they acquire in a little time a great relish for it, and drink of it immoderately. Such water appears to stimulate the nerves of the stomach, and excite a sensation which gives pleasure to the animal. When a relish for such water has been established, it is difficult to get them to drink clean running water : perhaps, when very thirsty, they may be induced to sip a little ; but they take care to reserve their appetite for their favourite

beverage, of which they drink immoderately as soon as it is within their reach. I have been informed by an experienced correspondent that he once saw fourteen cows belonging to one farmer affected with red water at the same time, and that it was brought on by drinking turf or peat-pit water. He says, that about Proud Preston, in Lancashire, at a place called Leland Mosside, there were more cows affected with red water than round the country for nine or ten miles, and that it was brought on by drinking peat-pit water. I have no doubt that cows acquire a strong relish for this water, and are led to drink of it immoderately, in which case they always eat immoderately if they can obtain sufficient food. The evils arising from immoderate drinking and eating are often very gradual in their approach and in their progress, which is the cause of their not having been sufficiently attended to at an early period; and it is to be regretted that from a want of sufficient reflection upon the causes of diseases, the *remote* cause has been so little noticed by farmers. The following circumstance has lately been communicated to me: — A farmer of Somersetshire had forty head of store cattle, which he was feeding with mangel wurzel, parsnips, and hay. One of them could never be prevailed upon to drink, though repeatedly offered water from a pond and from a pail. This animal, however, when slaughtered, was found to be the best of the whole. I have been informed that there are farmers, who, in rearing calves, always keep them in a field where there is no water; and that they are not only preserved from the quarter-ill, but thrive better in every respect. In rearing cattle, the object of the farmer should not be to fatten, or force them, as it is termed, but to preserve their health and invigorate their constitutions. To accomplish this, they should have a useful degree of exercise in obtaining their food, and no more water than is necessary to digest it.



## CHAPTER II.

## DISEASES OF THE DIGESTIVE ORGANS.

*Acute Indigestion of the First Stomach, commonly named  
Hoove, Hoven, Blown, Blasted, &c.*

THIS disorder occurs from the animal feeding greedily on pasture it is unaccustomed to, especially clover and other artificial grasses. When the rumen becomes filled beyond its capacity, the food ferments, and gas is extricated, which so distends the stomach that rumination is completely put a stop to.\* When this happens, a severe degree of pain is produced; the beast refuses to feed, and ceases to ruminate, but stands still, moaning, and breathing with difficulty. The abdomen is greatly distended; and the rumen pressing upon the diaphragm, the lungs are prevented from receiving sufficient air; and if relief is not quickly afforded, the animal dies. The remedy usually employed is a flexible instrument†, which being passed into the

\* The gas has been found to consist in the early stages of carburetted hydrogen, and afterwards of sulphuretted hydrogen, or a combination of both.—Ed.

† A patent instrument is sold for this purpose, by saddlers, in many parts of England. When this is not at hand, there is no difficulty in making an instrument for the purpose, by taking three small canes, each of them six feet long, and binding them together with waxed packthread. At one end there should be a ball of wood, about the size of a pigeon's egg, firmly secured. To introduce this instrument into the stomach, the bullock's nose should be held out as nearly in a straight line as can be with the gullet or throat; and when held firmly in this situation by an assistant, who grasps the partition of the nostrils with the fingers and thumb of his right hand, the operator can easily force the ball end into the stomach, and let out the confined air.

stomach, the confined air rushes out, and the animal is, for the time, relieved. The stomach then recovers its energy, and gradually throws up the fermenting food. A more common way of affording relief is by plunging a sharp knife into the distended rumen, where it is most prominent; that is, on the left side, between the last rib and the hip bone. As soon as the knife is withdrawn, the air rushes out violently, and generally some of the fermenting clover is forced out with it. It is necessary, however, to introduce a suitable tube, or the opening would soon close. If there be no tube at hand, the wound may be kept open by a quill or a skewer, the sharp point being first cut off, and the end made smooth and round.\* When the air has been discharged, the following drench may be given, and the opening closed by means of a sticking plaister made of pitch, or Burgundy pitch; or either of these may be melted with a little bees' wax for the purpose. After this accident, cow-leeches, or doctors, as they are now more commonly called, usually give some cordial drench; and if it be joined with opening medicine, as in the drench for red water, such drenches do good. After this, it is a good plan to turn them into a bare pasture, and let them remain there until the digestive system (for the whole of the organs participate in the injury in some de-

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[This instrument has now given place to Read's probang, which being introduced into the stomach by the mouth, the whalebone stilette is withdrawn, and the gas is extricated through the cavity of the probang. The same apparatus being affixed to the pump or syringe, liquids can be injected into the stomach, or ejected from it. — ED.]

\* The best instrument for the performance of this operation is the trochar, which is of steel, and its canula of silver. This instrument being plunged into the flank, taking care not to wound the kidney, the trochar is withdrawn, and the canula remains (through which the gas escapes), and must be kept in for some time, as long, indeed, as the gas continues to escape. — ED.



gree) is completely restored. If, however, the proprietor prefers keeping the animal, and continuing the use of cordials, the following is the best *cordial drench* : — A pint of mild ale, with a tea-spoonful or two of ginger.

This should be given twice a day, and continued, if necessary, three or four days.\*

\* Mr. Youatt, in his work on Cattle, recommends for this affection two drachms of chloride of lime dissolved in two quarts of water, and administered by means of the stomach pump ; to be repeated, if required, in an hour. The purpose of this medicine is for the chlorine which it contains to unite with the hydrogen in the stomach, for which it has a strong affinity. Muriatic acid gas is thus produced, which is soon absorbed by the water in the stomach, and muriatic acid will be formed, which, uniting with the liberated lime, is prevented from doing injury by forming muriate of lime, a harmless medicine.

This certainly forms the best and safest treatment for this disease, but in cases of emergency must give place to puncturing.

The following observations of Professor Gellé, of Toulouse, will here find a proper place :—" Hoove consists in the sudden disengagement of gas in the rumen, considerably distending this stomach, pressing it against the diaphragm, and thus causing it to become a mechanical means of suffocation ; always placing the animal in considerable danger, and sometimes producing sudden death."

It is one of the cases of most common occurrence in veterinary practice, and is frequently complicated with other serious maladies.

Its causes are numerous and varied ; and it is of frequent occurrence, in proportion as the animal is moved from its natural state and habits. In the wild state of the ruminant, the wants of nature being freely supplied, this disease has never been recognized.

It is comparatively rare where the animal is out at pasture during almost the whole of the year browsing at his leisure, but it is most prevalent where an artificial mode of feeding prevails. Trefoil, or lucern, or turnips, or even luxuriant aftermath freshly cut for the stable, or eaten in the field, are the most frequent causes of hoove ; and these kinds of food become more dangerous if they are damp, or covered with dew or white frost ; or if they contain too much sap, as is generally the case when they are prematurely consumed.

The tumefaction of the paunch has been attributed by some persons to the property which those plants possess of disengaging a considerable quantity of gas, or to the evaporation of the dew or any other

An animal that has suffered from this disorder must be fed with great care afterwards. A rather bare pasture

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moisture which they contain, and it is effected by the increased temperature in which they are placed.

The treatment of hoove in cattle is accomplished, first, by the escape of the disengaged gases, either by the mouth or anus; secondly, by the neutralization of these gases by certain medicaments; and, thirdly, by the puncture or incision of the paunch, by means of which the gas and aliments are evacuated. Let us examine these different means, and the different indications which the varieties of meteorization present. When the extrication of gas is inconsiderable, the walking of the animal about will often effect a cure; but when the tympanitis is serious, other measures must be used. Liquid ammonia, or ether, may cause a sudden diminution in bulk of the gas; or, in various cases even of considerable intensity, nature has been found to effect a cure without the aid of art. Observation having proved that in serious cases of hoove the gas cannot naturally escape from the paunch in a sufficient quantity to effect a cure, it has been proposed to assist its escape by means of a flexible tube introduced into the œsophagus; but this proceeding is sometimes dangerous in unskilful hands. Many medicaments possess the property of neutralizing the gas extricated from the aliments contained in the paunch. Chabert, considering that these elastic fluids were in a great measure composed of carbonic acid gas, recommended the use of certain alkalies, particularly lime-water, the potash of commerce, and more particularly liquid ammonia. The success which attended this mode of practice gave it considerable reputation: it is at the present day the remedy most usually employed in doses of an ounce and a half for the larger ruminants, and of two drachms for sheep; mixed in a pint of water for the first of these animals, and a glass for the second. Experience has proved to me its efficacy whenever the meteorization has been recent, and produced by green food, because in this case there has been no inflammation of the digestive organs. The effects of the medicine should be assisted by leading the animal about, and by clysters of warm water holding in solution a handful of common salt. These will generally produce the evacuation of the excrement accumulated in the large intestines. But whenever the state of the pulse, the redness of the tongue, and the heat of the mouth have caused me to suspect the commencement of inflammation, I have always had recourse to sulphuric ether, because it promptly condenses gases, and does not cause any dangerous irritation.



affords the best diet for it; and if that cannot be had, bran mash is the best food that can be given. A repetition of this accident is more dangerous, and more difficult to relieve, than the first, and so on in succession, until it becomes absolutely incurable; for the muscular power of this organ, as well as of every other, is limited, and there is a period when it can act no longer.

*Indigestion — Distention of the Stomach with Food.*

Cattle, when stall-fed, as it is termed, that is, when kept tied up, are liable to indigestion, which sometimes proves fatal; and from the information I have obtained, it appears to me that raw potatoes, and unbruised oats, or oats without chaff, are more liable to produce this effect than other food. It is probable, however, that potatoes would be found wholesome food if given more cautiously than they often are; or if boiled or steamed, and given with cut straw or chaff. When stall-fed cattle are thus affected, they are said to be blasted. The best remedy in this case is the following opening drink, and clysters composed of salt and water — half a pound of salt being dissolved in four or five quarts of water. The animal should be moved about a little, unless there is too much swelling and difficulty of breathing to admit of it. In such cases, and indeed on all occasions of this kind, it is advisable to take some blood; and when the symptoms are urgent, and the head much

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Whenever the meteorization is extreme, and the inflation of the rumen is so great as to interfere materially with the action of the diaphragm, and threaten a rupture of it, a puncture should be effected by means of the trochar. This opening should be made at the superior part of the left flank, corresponding with the superior face of the rumen, at an equal distance from the last rib, the external angle of the paunch, and the transverse lumbar apophysis. (*Vet.* vol. xiii.) — ED.

affected, the quantity taken off should not be less than a gallon, or more, unless the head appear relieved. It would be proper also to introduce the flexible instrument noticed in the preceding chapter.

*Carminative Drench.*

Common salt	-	-	-	4 oz.
Powdered Barbadoes aloes			-	$\frac{1}{2}$ oz.
Powdered ginger		-	-	2 dr.
Water	-	-	-	1 qt.
Anodyne carminative tincture			-	2 oz.—Mix.

As soon as the drench has been given, throw up the clyster of salt and water. When cattle have been griped, or disordered in the stomach, by feeding on oats unbruised, and unmixed with chaff, I have seen this drench afford speedy relief, and have afterwards found a considerable quantity of oats in the dung, that had scarcely undergone any change in their appearance. I have known a farmer lose three oxen by feeding them on potatoes when they were plentiful, and probably given too freely.

In the sixth volume of *Instructions et Observations sur les Maladies des Animaux Domestiques*, by Chabert, Flan-drin, and Huzard, there is a case noticed where they went so far as to make a sufficient opening to introduce the hand, and draw out the fermenting food.\* When cattle are

\* It is important to distinguish between distention of the rumen with gas, and with food; although it is somewhat difficult to do so, the symptoms being rather similar. When, however, the distention is produced by solid matters, the swelling of the abdomen is not so great, and the distress is not so urgent, although the danger may even be greater. On pressing the abdomen in the region of the rumen, it feels hard and firm; and if either the probang or the trochar is employed, there is no gas extricated. M. Gellé, on this subject, observes, "I would now make a few observations on mephitic indigestion, arising from



fed on turnips, potatoes, or other root, they are sometimes *blasted*. In such cases the symptoms are seldom so urgent

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over-feeding ; a malady more frequently occurring among stalled beasts, or those who have been kept upon dry food. It is characterized by a less sudden distention of the rumen, with hardness and fulness of that stomach ; rapid loss of flesh ; the pulse small, concentrated, and often feeble, and this always succeeded by inflammation of the digestive organs if not combatted in time. Some veterinary surgeons have confounded this malady with gastritis, complicated with inflammation of the rumen. In gastritis, the meteorization is only secondary, and to be attributed to the fermentation of the food contained in the paunch longer than the usual time, on account of the suspension of the rumination. In tympanitis from overloaded stomach, meteorization is frequently the first symptom, and to which we must also add the fulness and hardness of the paunch ; for that organ is, secondarily at least, the seat and source of the inflammation of the organs of digestion. This variety of tympanitis resists the power of mucilaginous drinks ; of ammonia, of ether, and even also of the puncture. The accumulated food, hard and dried in the rumen, forms certain pellets, which, on account of their bulk, can no longer be returned to the mouth for a second mastication. It is absolutely necessary to cut into the paunch, and to introduce the hand, in order to empty it of its contents. I think that it is injurious to pour any liquid in considerable quantity, whether medicated or nutritive, through the incision made into the paunch, in order to extract the food with which it is surcharged." (*Vet.* vol. xiii.) It is desirable, indeed, in these cases, after other means have failed, to ascertain the nature of the contents of the rumen by means of the trochar, and also the degree in which the distention exists by the resistance offered to the trochar in moving it about. In mild cases, a drench composed of purgative and carminative medicine, assisted by injections, has proved successful ; in other cases, bloodletting has been required. In obstinate cases, it is desirable to inject a considerable quantity of liquid into the stomach by means of Read's stomach pump, so as to produce an evacuation of the contents by exciting vomiting. A successful case of this practice is related by Mr. Cotcheifer, in the *Veterinarian* for 1834. In cases where this cannot be done, and where the food is of a heavy nature, such as potatoes or other roots, recourse must be had to an operation which consists in making an incision into the left flank five inches in length, penetrating the rumen, and removing its contents mechanically. Great care must be taken that the food does not escape from the rumen into the cavity of the abdomen, as

as when they are blasted with clover, or food of that kind. One of the following drenches will generally afford relief, especially if assisted with a clyster of salt and water. In some cases of this kind, the piece of turnip or potatoe appears to stick in the throat: this is commonly named

*Choking*, and may in some cases depend merely on the piece being too large; most commonly, however, it arises from indigestion, and a consequent distention of the rumen with air. This may be seen by the swelling of the body; and in many instances when a sharp knife has been plunged into the left side, and vent given to the confined air, the turnip is immediately swallowed. The most common remedy in these cases is to force down the turnip into the stomach by means of a moderate-sized rope, about seven feet long; by this operation any confined air there may be

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otherwise it will produce dangerous inflammation. The food being removed by the hand, the wound should be united by stitches. This operation is necessarily dangerous, and should only be performed in extreme cases. An interesting and successful case is, however, recorded by Mr. Steel, in the *Veterinarian* for the year 1834. The cow was first punctured with a trochar, but no gas escaped; and Mr. S. found that the stomach was distended with food, and that not a moment was to be lost. He therefore says, "I made an opening into the stomach about five inches in length, when the contents came rushing out in a large stream, and continued doing so for some time; and when it had stopped coming of itself, I introduced my hand and removed a great deal more of it. The quantity of this indigested mass which was removed is almost incredible. After being satisfied with what I had removed, I stitched up the wound, and had the cow raised on her feet; and, being afraid of inflammation taking place, as the weather was very hot, I drew a quantity of blood from her; gave a pint of olive oil and eight ounces of Epsom salts, which acted very slightly next day. The second day the cow required bleeding and a purgative. On the third day, there being hard food in the rumen, the point of the syringe was introduced and the mass divided, and some tepid water injected through the wound, and a dose of physic was again given."

The cow afterwards did well, in spite of a severe cold. — ED.



in the rumen, or first stomach, is suffered to escape.\* But it is advisable, whenever this happens, as in the foregoing

\* *Choking*.—The following useful observations and directions on the subject of choking are from the pen of Mr. Read, of Crediton, and appear in the *Veterinarian* for April, 1840. Mr. Read observes that the loss of farmers from choking is very considerable, and that, in many instances, death is produced by the violent and improper use of the flexible tube. He remarks, that if the obstructing object is round, it is more likely to produce dangerous effects than if of other forms; and he mentions a case of a potatoe producing death in the course of ten minutes. He employs a rather large tube with moveable ends, so that he can vary them; and has found that a knob cut obliquely across is often effectual in removing the obstructing body, by pressing it more on one side than the other. He afterwards describes the symptoms and treatment of choking, commencing with some useful directions for confining the animal:—

“Let a rope with a running noose be thrown over the head of the animal, behind the horns; bring the long end in front, and affix it to the beam of the cow-house, or, if in a turnip field, to the nearest gate-post. Let one assistant hold the animal by the nose and one end of the mouth-piece. After buckling the leather strap behind the horns, let the head of the cow be so loose that you may be able to raise or depress it at your will; you will then have every thing ready to commence.”

*Symptoms*.—Violent husking; forcible contraction of the abdominal muscles to expel the offending body; spasmodic action of the muscles of deglutition; the neck drawn up in the form of an arch; the head a little raised; the nose poked out; issuing of ropy mucus from the mouth and nose; frequent dribbling of urine and expulsion of fæces. As the rumen becomes distended, so the tongue is thrust out, and the eyes weep.

*Treatment*.—As soon as you are called to a case of this kind, let half a pint of oil be horned down: if this cannot be obtained, melt a little lard, which I think is preferable. Dip the end of your tube into it; stand in front of the animal; pass the instrument along the roof of the mouth, and it will with little trouble pass into the œsophagus. When it has reached the obstructing body, use firm and moderate pressure, no more; alternately raise and depress the head. If it does not easily pass, wait; be not impatient, as the longer it remains the softer it gets. When you again try, you, as well as your employer, will be surprised to see how quickly it is removed; impatience has been the means of killing scores. A bullock once choked and relieved will choke himself again in ten

cases, to take away the animal for some time, and after taking one of the following drenches, to give it some

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minutes if the turnips or other roots are not removed,—a case that has happened to me; and I have been obliged to relieve the same bullock again before leaving the farm-house. I always order a slop-mash for a day or so, and remove solid food, thereby allowing the overstretched muscles of the throat to resume their former tone.

Laceration of the lining membrane of the œsophagus and its muscles is the product of too great mechanical force being used, and from ragged tube ends. A laceration is soon discovered. When in the neck part, a swelling commences and hourly increases, generally above the accident in a much greater proportion than below. It is a hard, tense, inelastic swelling, from an infiltration of mucus into the surrounding tissue. The poor beast seems to be aware that something else has occurred; fever is soon set up; respiration becomes painful; the animal moans, refuses every thing; the breath becomes fetid, and death ensues from the third to the fifth day. If the animal is in good condition for the butcher, my advice is to let it be slaughtered; do what you will in these lacerations, they generally die.

I do not agree with Professor Gellé, that the swelling arising from a torn œsophagus is a soft fluctuating tumour; every case I have seen has been quite the reverse. Longitudinal splits in the throat, whereby the obstructing body gets into the surrounding substance, is perhaps what the Professor means; yet it rarely happens in the cervical part, but chiefly in the floating portion within the chest, that bodies escape out of the œsophagus. Rupture of the œsophagus within the chest is soon fatal: the beast swells, and is in great pain; the breath is tainted with the odour of the ingesta of the rumen, from the air or gas escaping into the cavity of the chest, and being absorbed by the lungs; the eyes are suffused; there is great anxiety, and the chest is enlarged in circumference. Remedial means are of no use; and on opening the body after death, you will find the contents of the rumen and fluids also in the cavity.

*Hoven.*—This, as a consequence of choking, requires the use of prompt measures. It is generally the result of a round body becoming fixed in the throat, or from swallowing a little hay when only a small substance may be lodged there. It often happens that the country veterinary surgeon has to ride a mile or two to relieve a case of this kind. On his arrival the beast is ready to drop from flatus, producing pulmonary congestion, suffocation, and mechanical apoplexy, from pressure on the lungs. Lose no time in puncturing the rumen, and you will



exercise. The cause of these diseases is improper feeding; that is, suffering animals to indulge an immoderate ap-

then, in most cases with ease, introduce the tube. Sometimes if the animal will stand, the tube can be put down without puncturing the rumen. It may also happen when the animal is sadly blown that although the tube is introduced into the paunch, this viscus will not contract. In this case, press the flanks on either side at the same time, when the air quickly rushes out, and all is shortly well. Sometimes bleeding is necessary, especially if the eyelids remain swollen, or the respiration continues quick.

*Vomition* is also an effect of choking; but in this case the substance is lodged in the bottom part of the canal near to its entrance into the rumen, and is commonly a knob of the bind which surrounds a bundle of straw. The animal eats and drinks for a few minutes, then stands still; but before ten minutes have expired spasms come on, and the food is again thrown up. He will then begin to eat again, and the same effect follows until the substance is got rid of.

*Impaction.*—Occasionally turnips or other bodies are so firmly wedged in the roof of the mouth, that some force is requisite to remove them. The animal is continually tossing about her head, mumbling her jaws, and saliva is seen running from the mouth. Inspection of the mouth will detect the cause.

When the obstructing body is very near the mouth, though not sufficiently so as to be grasped by the hand, it is more prudent to withdraw it upwards than to force it onwards. For this purpose Mr. Simonds (whose inventive talents have often been ingeniously and successfully applied to similar purposes) has invented an instrument; and in introducing it before the Vet. Med. Association he made the following useful observations. He said that he was about to introduce to the notice of the Association an instrument which he had invented for the purpose of removing foreign agents from the upper portion of the œsophagus,—an accident that frequently occurred to our patients, and more especially to ruminants. The veterinary surgeon was often called upon to give relief to cattle that were choked, and which happened more commonly when they were living principally on turnips. The instrument generally used for that purpose was called the unchoking rope, and was like the one which he now held; excepting that this was shod with a piece of horn, which passed much more readily down the œsophagus than the loose flax or hemp with which the end is commonly furnished. It is a rude instrument, but not the less valuable on that account; for it frequently can be used with

petite. Such animals generally feed quickly and greedily, and thus it happens they may be choked when feeding on

success in cases where we are unable to dislodge the root with the probang. Mr. Munro, he believed, was the first person who improved upon the original instrument, he having introduced the hollow probang, which was made of iron wire twisted in a spiral form, covered with leather, and furnished at each extremity with a bulb, generally made of lead; this was perforated so as to allow the gas which had become disengaged in the rumen to escape through the canula after the foreign agent had been removed by the instrument. To this was afterwards added a flexible stilette to pass down the probang, in order to remove any obstructions which were not unfrequently driven into it from the rumen, occasioned by the force of the escape of the gas; the stilette likewise added to the strength of the instrument, which was found to bend when much power was obliged to be employed to remove the root from the œsophagus. As will readily be seen, the intention here is to propel the root onwards; but much mischief was occasionally done by lacerating the membranes of the canal. Mr. Read, for that purpose, invented an instrument intended to be passed down to the turnip or other root; and then, being furnished at the top of the stilette with a crank, and with a screw at the other extremity, the operator laid hold of the root by means of the screw and withdrew it. He had occasionally used Mr. Read's instrument, and in one or two instances successfully; but in the majority of cases he had failed. The failure he ascribed first to the circumstance of the root being too brittle for the screw to be inserted with any degree of certainty so as to draw it up; and secondly, from the extreme length to which it was required to pass the instrument. When the obstruction took place so low down the œsophagus as to be within a few inches of its termination in the rumen, its passage into that viscus might, in by far the larger majority of cases, be obtained on applying moderate pressure; and there was seldom any occasion to attempt to draw it up the gullet. He would much prefer using even some considerable force, when exercised with a proper degree of caution, to pass the root onwards; this he must frankly confess. In the course of his practice, and which had been somewhat extensive among this class of our patients, he had found that there were two parts of the œsophagean canal at which the root was most liable to be lodged; the one immediately at the termination of the pharynx, and the other within a short space of the entrance of the œsophagus into the rumen. Reflecting on this, and being accustomed to act as he had previously stated when the obstruction was low down,



turnips or potatoes before indigestion has taken place. There is another kind of indigestion, which sometimes

his object was to attempt the withdrawal of the root from the upper part of the œsophagus ; and for this purpose he not unfrequently had passed the hand, using, as a protection to the arm, the ordinary balling-iron. Although he often succeeded, it was not without some risk ; and he soon had made an instrument similar to the common gag, which would allow of the free passage of the hand and arm, and a rude sketch of which was here given. Being furnished on each side with a long handle, two assistants were enabled to keep the instrument firmly in the mouth, and, at the same time, prevent the patient from throwing the head on either side so as to subject the operator to risk of injury during his manipulations. Occasionally, however, it was found that the root and other obstructions had descended a little too far to be withdrawn by the hand ; and it was well known that if, under such circumstances, much force were used to drive it downwards, laceration or rupture of the œsophagus was almost sure to be the result. In order to prevent such an occurrence, he was led to invent an instrument\* by which it could be brought up. The instrument was made of an elastic hollow tube, through which passed a flexible stilette, furnished at the top end with a screw and handle, and at the other with a pair of spring forceps. When used, the forceps were to be drawn within the bulb of the catheter, and secured by the cheek-screw at the other end. The instrument was then to be introduced into the pharynx, and passed onwards until the bulb was brought into contact with the root. The screw cheek being next removed, the forceps, by passing on the stilette, would expand, and, being turned in different directions, the root might and easily would be laid hold of. This would at once be known by drawing back the stilette, the pressure of the edge of the bulb closing the forceps, and allowing them to be entirely drawn within it should the obstruction not be placed within their grasp. If we have succeeded in thus laying hold of the root, the instrument and root will be easily withdrawn. The difficulty in its use would principally consist in fixing the obstructing body in the forceps ; and, as he had previously observed, it would be necessary to turn them in different directions, in order to discover whether the root was taken hold of. These forceps

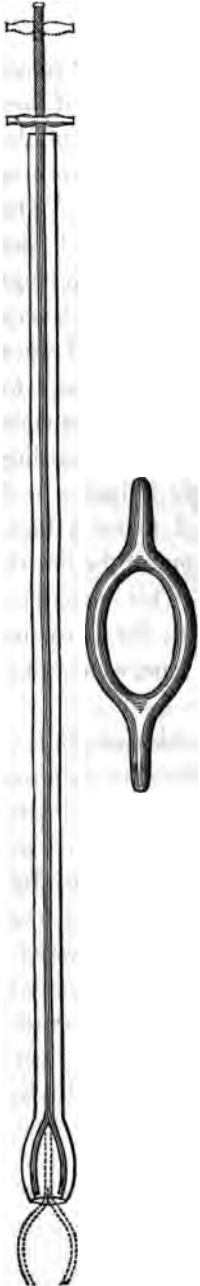
\* The engraving of the instrument on the opposite page represents the relative situation of its different parts when the forceps are within the œsophagus ready to expand and grasp the obstructing body, and also before it is inserted into the œsophagus. The small figure represents the gag.



happens when cattle are put suddenly into rich meadows or aftermath. This, in some districts, is named *meadow sickness*. The following case was communicated to me by my friend Mr. Joseph Bromedge, of Lower Stone, Gloucestershire. Several cows were put into a

are serrated on their inner surface and their edges, and made somewhat tapering, for the purpose of passing readily between the root and the side of the œsophagus.

Sometimes it is impossible to remove the obstructing body by any of the means described, it being too firmly wedged. It then becomes necessary to open the œsophagus by an operation. There are but few cases on record; one of which is related by Mr. Dyser of Dublin, in the *Veterinarian* for 1840. He says, "I found the cow in a state of suffocation, and blood flowing from the nose and mouth, from the attempts to extract the potato. On examination, by introducing my hand into the mouth through a balling-iron, I could feel the source of obstruction, which was a potato, situated at the commencement of the œsophagus. I endeavoured to extract it with my hand and a screw, but could not succeed, on account of the contraction of the muscular coat, which was great, from the spherical form of the obstructing body. I therefore cast her on her right side, and making an incision three inches in length between the sterno-maxillaris and the jugular vein, a little below its bifurcation, I separated the cellular membrane with my finger until I felt the carotid artery; I pushed aside this vessel and the nerves that belonged to it, and abstracted it. I now sewed up the external wound, and inserted a large canula into the paunch, for the purpose of supplying her with nutriment in the form of gruel. The paunch had been previously punctured to allow of the escape of the gas that had been extricated." The cow afterwards did well. — ED.



piece of rich aftermath ; when the proprietor went to see them, he found six of them very ill, and appearing as if they wanted to vomit. He immediately drove them out of the meadow, and put them into a field where the pasture was bare, and in which there was a number of mole-casts. The sick cows went immediately to the mole-heaps, and began to eat the earth greedily. The proprietor did not interrupt them, but waited to see the effect. He says, that in a very short time they appeared much easier, and soon after were completely relieved. The other cows did not attempt to touch the mole-heaps. It has been proved that when animals gorge themselves, there is an acid formed, which, passing into the fourth stomach, causes considerable irritation and pain ; and in one gorged cow I opened, I found a high degree of inflammation in the pyloric portion of the fourth stomach, or that part nearest the bowels. This enables us to account for the efficacy of the mole-heaps ; for all earths contain a large proportion of carbonate of lime, which, like chalk, is a powerful corrector of acidity.

Another circumstance has been communicated to me, confirmative of this opinion. My correspondent informs me that he has often had his cattle blasted, and has always relieved them by a drench in which there were three or four ounces of carbonate of soda, which destroys acidity more quickly than chalk. The other ingredients in the drench are half a pint of castor oil, and a quart of water. From a knowledge of these circumstances, I have been led to introduce into the following recipes an ounce of carbonate of soda. I must not omit to observe also, that another circumstance which causes an animal to feed greedily is keeping it too long without food.

*Recipes.*

## No. 1.

Epsom salts	-	-	-	$\frac{1}{2}$ lb.
Carbonate of soda	-	-	-	1 oz.
Powdered aloes	-	-	-	$\frac{1}{2}$ oz.
———— ginger	-	-	-	2 drams
Water	-	-	-	1 quart.
Anodyne carminative tincture	-	-	-	2 or 3 oz.

Mix for one drench.

## No. 2.

Common salt	-	-	from 4 to 6 oz.
Carbonate of soda	-	-	from 1 to 2 oz.
Best flour of mustard	-	-	from 1 to 2 oz.
Ale and water, of each	-	-	1 pint.

Mix for one drench.

## No. 3.

Warm ale	-	-	1 quart.
Powdered ginger	-	-	2 or 3 tea-spoonfuls.

Mix for one drench.

When no medicines are at hand, give a dose of common salt with some mustard or ginger; and if there be no beer, mix a glass or two of gin or other spirit with the quart of water in which the salt is dissolved. If the brain appear to be oppressed, which is indicated by great heaviness or sleepiness, bleed according to the emergency; and whenever a clyster-pipe and bladder can be procured, a clyster of salt and water should always be administered. It is almost superfluous to observe, that when an animal has been blasted it is thereby rendered more liable to the disease than it was before, as the stomachs, and especially the first or rumen, are weakened by it. It should also be recol-



lected that the stimulating drenches employed as remedies, though necessary to the animal's relief, are a powerful excitement to the nervous structure of the stomach, and must be followed by a proportionate degree of debility. This weakness, however, may be only temporary, provided the organ be permitted to recover by suitable attention to diet or feeding. Turning the beast into a field for two or three days, where the pasture is rather bare, is the most effectual restorative; but when this is not convenient, it must be fed sparingly a few days, and with food that is easy of digestion. The following precaution should always be observed. When cattle are first put into clover, vetches, rich aftermath, or in short into any pasture much better than that from which they may have been taken, let them remain at first only a few hours, or much less if it be clover, and put them into a field where the pasture is bare; thus they may be gradually brought to remain there with advantage. Another circumstance to be ascertained is the kind of water they have been accustomed to; for if there is clear running water in the new pasture, and they have been used to filthy pond-water, there will be less danger of their gorging themselves; but where they have free access to such water as they have been accustomed to, the above precaution cannot be too carefully observed. When the pasture consists of meadow land, and is situated near a river, the cold night fogs, which prevail in such places, are very injurious to cattle unaccustomed to them: therefore it would be prudent sometimes to place cattle, during the night, in some higher situation, or in a barton, and inure them to the climate gradually.

#### *Chronic Indigestion.*

The method of feeding cattle during the winter has a tendency to weaken the digestive system, and especially

that of the milch cow. The best food for the animal is that which Nature has provided for it; and when that cannot be obtained, the best substitute is good hay. The hay, however, commonly given is not good; on the contrary, a great deal of it is either of indifferent quality, or bad. Cows that are tied up during the winter are more liable to be injured by this mode of feeding than such as are kept out; they have often, however, this compensation,—they are sheltered from the wet and cold, and generally have better hay given them than cattle that are kept out during the winter. These have the advantage of exercise, and some proportion of green food, during great part of the winter, and are thereby enabled to digest bad hay better than cows that are kept tied up. The injury which this does to the stomachs, or digestive system, takes place gradually; and when the spring returns, and the cow is turned into fresh pasture, the constitution gains strength, and the digestive power is renovated or improved. A return to the same food in the winter weakens the digestive system still more; and the renovation which takes place during the following spring and summer is less complete, and takes place more slowly. Weakness of the digestive system causes weakness of the whole body. The degree of weakness thus produced in the stomachs, and in the constitution, generally depends upon circumstances which should be taken into consideration. Cows that are of a hardy constitution resist the influence of improper feeding and want of exercise better than such as are rather weakly, or that have been brought from a warm to a colder climate, or from a poor soil to one that has been more recently cultivated; and there is something in change of soil more than this,—that is, a disorder is often produced by change of pasture, while the difference in the pasture has not been evident. But whenever such disorders take place from changing cows from



one pasture into another, when there is no observable difference between the two pastures, it appears to depend upon two circumstances,—viz. a previous weakness of the digestive system, and an increase of appetite and digestive power, arising from the change of food and situation. The previous weakness always depends on the winter's feeding. Bad hay abounds with fibres, and is deficient in nutritive matter; therefore, when ruminated, it is kept back in the third stomach, which serves as a press, and after the nutritive fluid has been pressed out into the fourth stomach, the fibrous parts are expelled and carried off through the bowels. In animals that have died of red water or scouring, we generally find an accumulation of hardened food, or rather excrement, for such it really is, between the leaves of the third stomach. These plates or cakes of hardened excrement appear to consist of the fibrous part of the hay matted or compressed together, and sometimes of the fibres of coarse grass, which the animal has picked up about the hedges or ditches. The muscular coat of the stomach appears tender, and the cuticular coat comes off, either wholly or partially, with the hardened excrement; the surface of which is covered with small holes, the indentations of the papillæ, or small eminences, with which the leaves of the third stomach are covered. In France, and other countries where they are fed chiefly on green succulent food, these disorders are not so common, and those that do occur are of the inflammatory kind, arising from repletion of the blood-vessels. These often quickly degenerate into putridity, and can be arrested only by early and copious bleeding. While we are under the necessity of feeding cattle, during the winter, on hay, and cannot always obtain good hay, we should endeavour to lessen the evil as much as possible, and use the most effectual means of relieving them as soon as any disorder appears. The early application of remedies is a matter of great importance, and it



is to be regretted that this is so seldom attended to as we find it to be. It is too common a practice to pay no attention to the disorders of cattle until they become confirmed or incurable, and then expensive and useless drenches are often employed. Chronic indigestion, then, depends upon diminished energy of the stomachs; and the exciting cause of their disorders is an accumulation of fibrous matter in the third stomach, which gradually becomes weaker and weaker, while the fourth stomach and the whole constitution participate in the injury. Another cause of disorder in the digestive system of the cow is frequent distention of the first stomach, commonly named the paunch, or rumen; when this happens, rumination becomes more or less difficult. In this case also, the other stomachs participate more or less in the disease. So important is the office of the stomach, especially in the milch cow, that whenever the digestive function is impaired, the whole body is more or less affected. Exposure to wet and cold weather depresses the powers of the constitution; and in this case the digestive system becomes weakened, and is rendered more liable to disorder. The grinding teeth sometimes are injured by the stalks of dock, or bramble, mixed with the hay, which renders mastication difficult and imperfect, and this may become a cause of indigestion. A certain degree of weakness in the stomachs will induce a disordered state of the bowels, and sometimes of the kidneys and udder. Cows sometimes become disordered in the stomachs from temporary causes; such as drinking freely of cold water after heating themselves by exercise, or by being worried by dogs; and the higher their condition, the more liable are they to such attacks: this is properly enough termed a chill, and is sometimes productive of serious diseases.

I had occasion to visit, a short time since, a very fine dairy; the best I think I ever saw. On examining the cows that were tied up to be milked, I found that each

cow had a considerable quantity of oats before her, in a manger made for the purpose, without chaff, or any mixture whatever. On inquiry, I found that each cow was allowed half a peck twice a day, and that they gave but little milk. The business which brought me there was to prescribe for one of the cows, which I found labouring under what the cow-keeper called a *sort of a chill*, or a touch of the yellows. It was a well-marked case of indigestion, attended with symptoms of flatulent colic, or gripes. The cow refused her food, and had lost her quid, as they term it; that is, was incapable of ruminating. She appeared to be in considerable pain; her back was drawn up; she was costive, and did not appear to have voided urine. She was very restless, and soon lay down again; threw her head round towards her belly, and attempted to strike it with one of her hind feet. The ears and horns cold. The pulse was between seventy and eighty. I threw up a clyster of above five or six quarts of warm water, with one pound of salt dissolved in it, and gave the drench I always employ on such occasions; that is, 4 drams of Barbadoes aloes, 1 dram of powdered ginger, 4 ounces of table salt, and 1 quart of water. Into the first hornful of this mixture I put half an ounce of tincture of opium (I now substitute for tincture of opium 2 ounces of the anodyne carminative tincture). This was all the medicine I administered. I ordered the cow to be turned out immediately. About three or four hours afterwards she was drenched twice with whey. This made her rather sick; therefore she was turned out again, and I directed nothing more to be given. I should have observed, that the drench soon put a stop to the symptoms of gripes; but there was still great uneasiness, and evidently an obstruction in the third stomach. Soon after taking the whey, she dunged, and with her dung there was a considerable number of unchanged oats; not soft and swollen, like those voided by the



horse in his dung when he masticates imperfectly, for they appeared to have undergone no change whatever. I saw her again at night. She appeared still in pain, and shivering in her hind parts; her back was drawn up, and the cow-keeper considered her worse. She was not griped, however; and I was satisfied, from her appearance, that the aloes and salt were then doing their work in the third stomach, and that that was the cause of her not seeming so well. I directed, therefore, that she should still be kept out and have nothing more given her. During the night she was completely relieved, and in the morning was found grazing. I have described this one case, not only to show the method of treating it, which I think will always be found effectual, but to prove likewise the impropriety of feeding cows in this manner. In the first place, it appears to me that oats eaten alone cannot be ruminated without great difficulty; and even supposing that they could, I have made it appear sufficiently clear, I trust, in a former article, that grain does not promote the formation of milk, but of fat; and that, in so doing, the disposition of the animal becomes changed from that of providing for her young to that of propagating her species. The balance then between the lactiferous and the chyloferous systems undergoes a change; the chyloferous system predominates, and the food that is taken in goes principally, and perhaps in a short time wholly, to the production of fat. The purpose, therefore, for which the oats are given must be entirely defeated, for these cows are kept solely for the dairy.

I could not but consider the feeding of cows with oats as a very extravagant and useless practice; if not absolutely injurious, as likely to cause indigestion; and I have since learned, in corroboration of my opinion, that the practice has been abandoned.



## CHAPTER III.

## INFLAMMATION OF THE STOMACH.

THIS is a serious disorder, and happens more frequently than people are aware of; it takes place, however, in various degrees, causing a diversity of symptoms, but all of them bearing such a resemblance to each other as will enable the practitioner to discover their origin. A certain degree of inflammation in this important organ will cause such an alteration in the milk, that when it arrives at the udder it will irritate and inflame it; and when the milk is drawn off, it will be found thin, yellowish, with small thread-like coagula, or, as it is termed, stringy. Sometimes it has an offensive smell, and even assumes the appearance of matter; and at others it has a reddish appearance, as if blood were mixed with it.

Inflammation of the stomach may be produced by the animal taking too much food; in which case the digestive process is suspended, and then the food ferments, and a great quantity of air is extricated from it, which so distends the stomach as to inflame it. The bowel generally partakes of the inflammation.

This is different from the disease termed *hoven*, or blown, in which the rumen, or first stomach, is the part affected; for here it is the fourth stomach. Unwholesome food is the most common cause, especially bad hay; but it also happens sometimes in summer, when the animal is in good pasture, and in cows that have been good milkers.\*

\* On this subject M. Gellé observes, "It remains for me to say a few words on indigestion and gastritis, which are sometimes confounded.

The symptoms are heaviness, dullness, and want of appetite. The lungs are often more or less affected, which is known by the breathing being disturbed, and sometimes by the hoose, or cough, which attends it. Bleeding is the first remedy, especially when it happens while she is in good pasture, and is fat, or in good order; and then a saline opening drench may be given, with the addition of a little castor oil.

When the disease occurs while the animal is fed on hay, there is generally, perhaps always, a collection of the fibrous parts of the hay, in a dry and compressed state, between the leaves of the third stomach, which must be dislodged before any relief can be expected. The following opening drench, and a clyster, should be given for this purpose; and the cow should be turned out for exercise in a sheltered field, or barton, and be fed very sparingly. Whey, or thin bran mashes, are perhaps the best food. When the season of the year, or other circumstances, prevent her being turned into a field where the pasture is bare or short, she should always be allowed to drink freely, as that will assist in clearing the third stomach; and when that has been accomplished, she may be kept better; but this must never be done hastily. Some time must be allowed for the digestive system to recover its tone or energy.

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Indigestion may be either the cause or the effect of gastritis. In hoove, indigestion is essential: if the hoove is followed or complicated with inflammation of the digestive mucous membranes, indigestion is the cause of gastritis. If inflammation of the abomasum is primitive, and there is also meteorization of the paunch, or cessation of rumination, gastritis, or even enteritis, is the cause of the indigestion, which is only secondary.

*Saline Oily Opening Drench.*

Epsom salt	-	-	-	8 to 12 oz.
Carbonate of soda	-	-	-	$\frac{1}{2}$ oz. to 1 oz.
Water	-	-	-	1 quart.
Castor or olive oil	-	-	-	4 to 6 or 8 oz.

Mix for one drench.

*Opening Drench for Cows that are kept on Hay, or that have been recently taken from it.*

Barbadoes aloes	-	-	-	$\frac{1}{2}$ oz.
Powdered ginger	-	-	-	1 to 2 dra.
Water	-	-	-	1 quart.
Epsom salt	-	-	-	6 oz.
Carbonate of soda	-	-	-	$\frac{1}{2}$ oz.

Mix for one drench.

From the foregoing observations it may be perceived that inflammation of the fourth or milk stomach may take place in various degrees, and under different circumstances; and some difference in the mode of treatment is therefore required.\* The state or condition of the cow, the pre-

\* Inflammation of the mucous membrane of the stomach is more frequent than is generally supposed; but it is generally accompanied by disease of the small intestines at the same time, particularly of the duodenum. The French give the name of gastro-enteritis to this affection; and M. Gellé, in his late work, treats of it at some length under this head: He says, "Inflammation of the fourth stomach or abomasum of ruminants, with that of a greater or less portion of the small intestines, constitutes the *gastro-enteritis* of pathologists." Professor Toggia, whose opinion is of great authority, says, "Inflammation of the stomach and of the intestines is a disease which attacks all animals, but more especially the bovine race, and in which the cure of it is exceedingly difficult, on account of the peculiar structure of the digestive organs, and the quantity and quality of the food which they contain; circumstances which enfeeble the action of the medicines, the effects of which are only slowly sensible.

"This disease consists of gastritis and enteritis united, as the name *gastro-enteritis* indicates; for the causes which produce gastritis do



sence or absence of febrile symptoms, the age of the animal, the period of the disorder at which she is seen, the season

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not always confine their influence to the stomach : they can extend their action even to the small intestines, and particularly to their gastric and duodenal portion. The same influence may be recognised even in the abomasum. The symptoms of the disease often plainly demonstrate this extension of inflammation from the stomach to the intestines, and from the intestines to the stomach. In the latter case particularly it commences with diarrhœa, colic, &c. &c. : in the first, by anxious thirst, headach, heat, and dryness of the skin, yet rarely by vomiting in herbivorous ruminants ; but if the extension of the inflammation from one of these viscera to another takes place in the course of the disease, the symptoms are not so acute.

" The causes of these affections are sometimes inappreciable, and their action depends on a great number of circumstances and of individual predispositions, the nature of which escapes our closest investigation. In the majority of cases, however, if we closely examine the patient, the cause will be sufficiently plain. The lymphatic temperament of the ox, the peculiar structure of his stomachs, the immense quantity of food which they often contain, the peculiar mode of digestion ; these will generally afford us some clue to the predisposing cause of the disease, especially if the animal is in a state of domesticity."

As immediate causes of the disease, M. Gellé enumerates various stimulating and heating plants, as the ranunculus and colchicum, and others difficult of digestion. Also damaged or rotten food, bad water, grass covered with white frost, and long continuance on dry food. In addition to these, a cold and wet atmosphere, and its sudden changes ; drinking freely of cold water when heated ; and kicks or blows on the abdomen. He continues : " Among the most constant symptoms of inflammation of the gastro-intestinal mucous membrane, is the loss of appetite in all animals, and the cessation of rumination in the ox. If the inflammation is intense, the tongue seems to be contracted, and is evidently straighter and more rounded ; the papillæ which cover it become erect and injected ; the tongue itself is red towards its point, and also at its edges. In certain intense cases of gastritis, and in some serious affections of the paunch or the abomasum, the duodenum and the liver participate in the inflammation, and the tongue is yellow or green. This colouring sometimes extends to all the visible mucous membranes. Vomiting, which can only take place when there has been primitive or secondary affection of the stomachs, denotes almost always a very intense inflammation, either most commonly continued from the abomasum and the pylorus, or also

of the year, and the situation in which she has been kept, are circumstances that must always be inquired into, and by which our treatment must be regulated; and in this there will be no difficulty, if we attend carefully to the principles or fundamental rules contained in the Introductory Chapter.

### *Loss of the Cud.*

When a cow ceases to chew the cud, or quid, as it is commonly named, it is a sure sign that the stomachs are disordered; and most commonly it depends upon an accumulation of dry fibrous matter between the leaves of the third stomach.\* When this happens, the fourth stomach, and

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from the œsophagean canal. Thus it is constant in chronic gastro-enteritis, and rare in acute. Nevertheless, if one part of the food is vomited, and the other passes from the abomasum into the duodenum, it is to be presumed that the seat of the inflammation principally exists in the abomasum.

"The diminution, and even the cessation of the secretion of milk, constant in cows labouring under gastritis, is only the result of the displacement of the vital action of the secretory organ, in consequence of the violent inflammation which attacks the mucous membrane of the digestive organs."

With regard to the *treatment* of this disease, M. Gellé relates his practice in various cases of different degrees of severity. In the milder ones he bled moderately, gave mucilaginous, laxative, and nitrated drinks, such as decoction of linseed or peeled barley, with two ounces of cream of tartar and a little nitre. In severer cases he bled to a greater extent, and sometimes repeated the bleeding. If pain was manifested, two drachms of opium were given; and if the rumen appeared distended, ether was administered. Injections were employed in all cases; and sometimes large poultices were applied to the abdomen, and setons inserted in the dewlap. The French mode of treatment is distinguished by great caution, often carried to an extreme; for in many of these cases moderate bleeding, and a dose of salts and sulphur, would have set all right in a short time.

\* Loss of the cud is a very common symptom of other diseases, but rarely a disease in itself.

sometimes the bowels, become disordered also. Loss of the cud may depend at first on a disease of the first stomach only, as is the case sometimes in animals that have been paunched, as it is termed; that is, have been stabbed with a sharp knife to let out the confined air, when the animal has been blasted, hoven, or blown. After this operation, an adhesion generally takes place between the first stomach and the side, at the part where the operation was performed; or, in other words, the stomach sticks to the side, and rumination is sometimes in consequence more or less imperfect.

Rumination means that motion of the rumen, or first stomach, by which the food is forced back into the mouth to be perfectly masticated. This motion is not sudden and painful, like that of vomiting; but gradual, gentle, and productive of cheerful feelings, when the animal is healthy and free from pain. By the adhesion before described, this gentle and gradual action of the first or ruminating stomach must be interrupted in some degree, and probably somewhat painful. Paunching, therefore, though it affords relief in some cases, is not so useful as introducing the probang, and letting out the confined air by the mouth. As loss of the cud depends upon an accumulation of fibrous matter in the third stomach, and a consequent disordered state of the whole digestive system, the first thing to be done is to give the following drench, or that prescribed for *red water*, and marked No. 1. This last drench is most fit for cattle of weak constitutions; for such as are old, and have been good milkers; and especially when the disorder takes place while they are fed on hay, or soon after they are turned into pasture in the spring of the year. But when there is a quickness of breathing, hot horns, and other marks of fever or inflammation, the animal should be bled freely, and take the following drench:—



Epsom or Glauber's salt, 6 to 8 oz.

Whey, one quart. — Mix.

After this has been given, let the animal be turned into a field where the grass is short; and if the weather is wet, it should be kept in a sheltered barton, and fed with whey and bran mash. If the disorder continue after this, a little ale with ginger may be given twice a day. When Epsom or Glauber's salt cannot be procured, common salt may be substituted for it; but it requires more dilution.

## CHAPTER IV.

## DISEASES OF THE BOWELS.

*Inflammation of the Bowels.*

THIS disorder in cattle is almost always a consequence of improper feeding, which causes indigestion and flatulency. The first symptom in such case is hoven; the beast is said to be *blasted*, that is, blown up, sometimes almost to suffocation, by the air which escapes from the undigested food.\* The bowels are so distended, or stretched by the air confined in them, that they either burst, or a high degree of inflammation takes place, which terminates in mortification and death. I have known this disease happen from stall-feeding on potatoes, at a time when this vegetable was cheap, and on that account the farmer was so imprudent as to give the animal more than it was capable of digesting. Turning cattle too hastily into rich pasture will sometimes produce the same effect; and so indeed will the best kind of food when given too largely to an animal that has an inordinate appetite, which is sometimes the case with cattle, but more frequently with horses.

The *Symptoms* vary more in the degree or violence with which the disease attacks, than in character. The animal appears to be uneasy, and loses appetite; the body swells, and appears most prominent on the left side. The pain gradually increases, and the animal becomes more restless, often lying down, and soon rising again; and sometimes striking its belly with the hind feet, or horns. If relief is not afforded at this period, inflammation takes place in the

\* See the article HOVEN, BLOWN, or BLASTING.

bowels, or in the stomach and bowels, which is known by the pulse becoming quicker and harder, the breathing more disturbed, and the pain more violent. This stage of the disorder is soon followed by death. The first remedy to be employed is the anodyne opening drench, that is, the drench No. 1., prescribed for *red water*; unless the breathing is much disturbed, and the attack violent, in which case the animal should be freely bled as quickly as possible; but in slighter attacks the anodyne opening drench, and the opening clyster, will generally be found sufficient. Still if the animal is in good order, it will be advisable as a precautionary measure, and especially if the horns are hot, and the vessels of the eye appear full. Clysters are a new remedy with cattle-doctors; but they are useful, and cannot do any harm, therefore every proprietor should be provided with the means of administering them. The animal should be turned into a field or barton to exercise itself. I have seen this disorder produced by giving a cow unbruised oats. Grain for cattle should always be bruised, and mixed with cut straw or grains.

*Flatulent Colic, Gripes, or Fret.\**

In this disorder the animal is in great pain, often lying down and getting up again, turning round its head to the

\* From the greater regularity with which cattle are fed, and from the peculiarity of their intestines, they are much less subject to colic than the horse; it is, indeed, a rare disease. There are, however, two varieties, — the flatulent and the spasmodic. The former is distinguished by the swelling of the abdomen and the passage of gas by the anus and the mouth; the latter, which is a spasmodic action of the intestines, is generally attended by a greater degree of pain. Both species are often relieved by carminative medicine; but, in the former instance, it is desirable to cause the gas to disappear by chemical means. For this purpose, Mr. Youatt recommends the chloride of lime in doses of two drachms, with the same quantity of powdered ginger, dissolved in two



hind parts, and endeavouring to strike the belly with its horns or hind leg. There is no appetite.

I have seen this disease brought on by feeding on unbruised oats alone. The opening drench for *red water*, No. 1., was given; and the cow, which had been kept tied up, was turned to grass: she had some whey given her also, and a clyster of salt and water. A considerable quantity of oats was brought off with her dung, nearly unchanged, and the disorder was completely removed.

#### *Mechanical Obstructions in the Bowels.*

[Cattle are liable to mechanical obstructions of the bowels, generally consisting of hair which is licked off the backs of other cattle and swallowed. The disposition thus to lick is probably owing to the presence of an acid in the stomach, which gives rise to an uneasy sensation similar to the heart-burn of the human subject. When this is suspected, some alkali, such as powdered chalk or carbonate of soda, should be given so as to neutralize the acid.

Balls may be formed of other material besides hair, as the following correspondence of Professor Dick will show. "A disease," observes Mr. Dick's correspondent, "has prevailed among the cattle, especially cows, near Aberdeen; this season, which appears to have been fatal in many cases, and to have been cured in none by medicine. It seems not to affect the animal's appetite until it is far advanced; and is found, on dissection after death, to consist of a complete

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pints of warm water. In spasmodic colic, an ounce of tincture of opium may be given with the above, or combined with an ounce of sulphuric ether. Unless immediate relief be obtained, the animal should be bled; and, if it still continues, a purgative should be added to the carminative and administered, and injections also thrown up.

stoppage in the gut by a ball of undigested food firmly packed very low in the gut, from which it has once or twice been removed by the hand.

“The constipation which is produced resists the strongest laxatives, and the animal falls off rapidly, and becomes mad with pain before it dies. I should be very glad if you would give me any information about the origin of the complaint, or its mode of treatment, that I may be able to relieve those who are suffering from it.”

“The disease,” writes Mr. Dick in reply, “is, generally speaking, rather a singular one; and you surprise me a little by stating it is so common in your neighbourhood. Horses are much subject to *dung balls*, or, more commonly, *dust balls*; but we have rarely met with the disease in cattle. In them *hair balls*, however, are not unfrequently found, giving rise to the same fatal obstruction of the bowels as that described. These balls are formed of the hair which they lick off either from themselves or their neighbours, and which becomes agglutinated together round some nucleus, by the mucus and other matters which are met with in the intestines. They cannot be dissolved by any medicine which the stomach and bowels could bear, and therefore can only be removed by the hand, or by repeated doses of purgative medicine, such as one pound of linseed oil with thirty drops of croton oil, and which dose sometimes succeeds in forcing the ball along. The dose may be repeated every twelve hours, and the quantity of croton by degrees be doubled. Oatmeal gruel, well boiled, should be given frequently to drink; and if they do not take it freely, it should be forced upon them with a horn or bottle. Clysters should also be given frequently, and may vary in their nature: first gruel may be tried, or soap and warm water; then one ounce of tobacco infused in one gallon of boiling water, or common oil, or gruel, may be admi-

nistered. Whichever is used, it should be frequently repeated. The whole surface of the belly should be frequently bathed with warm water; and it may be advisable to bleed, and to repeat the bleeding." (*Veterinarian*, vol. x. p. 29.)—ED.]

*Diarrhæa, Scouring, Scantering, &c.*

This is a disorder that happens more frequently than red water, and I believe more frequently proves fatal, or is only partially remedied; so that the animal is made very poor or indifferent beef. A permanent or radical cure is seldom obtained, perhaps for one or more of the following causes:—1st, The animal is not attended to, or properly treated, on the first appearance of the disorder. 2d, The animal is kept in an unfavourable situation, and fed improperly. 3d, The animal is of a weak constitution, either naturally, or from frequent calving and bad feeding.

If the disorder is attended to, and properly treated on its first occurrence, and the animal is of a tolerably sound constitution, I believe it may often be permanently cured by giving, in the first place, the drench No. 2., prescribed for red water, and every evening and morning afterwards the cordial astringent drench. The red water drench should be given early in the morning; and, if the weather is favourable, the animal should be turned into a field where the pasture is short. On the evening of the same day the cordial astringent drench should be given; and, if the weather is wet and cold, it should be placed in a sheltered situation. The drench should be continued three or four days after the scouring has ceased; that is, after the dung resembles that of healthy cows at grass. It is a common practice to keep a scouring cow in, and feed her with hay, barley-meal, &c. This hardens the dung, but does not cure the disorder; the stomachs and bowels continue weak, and the food serves but to oppress them. When



the weather is wet and cold, and good grass cannot be procured for them, they should be kept on such food as the stomach is capable of digesting, and it should be given in small quantities only at a time. There is a fine kind of bran, called *pollard* or *gurgings*, which is excellent food for them when kept within; and even at grass, if the medicine should not succeed, a small quantity of this food may be given them. It should always be recollected, however, that if the quality and quantity of the food are not suitable to the strength or state of the stomach, instead of affording nutriment, it serves only to oppress and weaken them still further. If really good hay can be obtained, a moderate quantity should be given, but only a little at a time. The water that is given them within-doors should not be very cold; and if a handful or two of wheat flour were stirred into each pailful, it would be found useful.

But when this in-door treatment is adopted, the opening drench should always be given first, and followed by the cordial astringent drench.\* It may be found useful, during the in-door treatment, to repeat the opening drench once in three or four weeks, and give three or four doses of the

\* The following treatment is recommended by Mr. Rawlings, of Bristol, in a communication to the Bristol Agricultural Society; and he states that he has employed it with great success:— Take gum-arabic two ounces, and dissolve it in a quart of strong decoction of wormwood, and one ounce of aromatic confection, and two drachms of gum-catechu. Give this astringent drench in linseed tea, and repeat it every sixth day for three times. After the second dose, if the cow gets no better, add two scruples of powdered opium, and from one to four drachms of prepared chalk, which I have known to have a good effect. After the first or second dose of the astringent drench, a judicious dose of calomel, conjoined with opium, say from ten grains of calomel to forty, and opium from ten grains to sixty, and in desperate cases from ninety and even one hundred and twenty of the latter drug. Sheep should have the same mixture prepared for them, and have a tea-spoonful given them as often as required. — ED.

cordial astringent afterwards. The expense of this drench is so moderate, that no reasonable objection can be made to giving it twice a day, and continuing it a short time. The practice of giving powerful astringents and stimulants is very injurious; for they give a temporary excitement and energy to the stomachs, which are always followed by depression. It should always be laid down as a principle, in regard to cordials and astringents, that the dose should never exceed the quantity that is capable of producing the desired effect. By repeating this moderate dose every morning and evening, the strength of the stomachs is kept up, and they are enabled to perform their functions properly, so as to form good chyle, and consequently good blood. As the blood increases in purity, the muscular coat of the stomachs will acquire permanent strength, and so will the brain and nervous system. This constitutes the radical or permanent cure; and when this has been accomplished, we should take care to avoid the causes by which the disorder is produced.

*Cordial Astringent Drench.*

Powdered catechu	-	-	2 drams.
Fresh powdered allspice	-	-	2 drams.
Fresh powdered carraways	-	-	half an ounce.
Good strong beer or ale	-	-	half a pint.
Table beer or water	-	-	half a pint.

Let the ingredients be simmered for a few minutes in the table beer or water, and let the strong beer be added at the time the drench is given.

Since the third edition of this book was published, I have had opportunities of examining scouring cattle that were killed after the disease had made considerable progress. On opening the fourth stomach the most remark-

able appearance presented itself in the folds or plaits which are thrown up on the internal surface of this stomach, in order to give an extensive secreting surface without a proportionate and inconvenient size in the organ itself. These plaits, in the healthy state, are about the twelfth of an inch thick, three or four inches in width, and extend from one orifice of the stomach to the other. In this scouring ox, they were nearly two inches thick, and changed to a weak semi-transparent jelly of a whitish colour; and the secreting membrane was entirely destroyed. I have found the same appearance in others, but not in so high a degree; and an intelligent farmer assured me that he had opened a scouring cow, and found the fourth stomach in a similar state. The whole of the bowels also were in a dropsical state, but in a much less degree than the stomach. I saw the scouring ox, whose fourth stomach was in so remarkable a state, before he was killed. He was a mere skeleton; but looked rather lively, and appeared to have an appetite. In driving him to the kennel he got into a pond, and continued drinking a considerable time. His rumen was quite full of haymaiden and water. This herb has a very offensive smell, and would not be eaten, I think, by an animal whose stomach was healthy. The front teeth were all loose.\* Though it is advisable to turn a scouring cow into rather bare pasture when the weather is favourable, yet she should not have

\* Scouring is not a disease, but only a symptom of several diseases; and it depends on the nature of the case whether the scouring will be stopped or not. The most simple cause of scouring is when it arises from irritability of the mucous coat of the intestines, and in such instances it may generally be cured. In other cases, it arises from the presence of vitiated bile in the intestines, the liver being affected; again, it may be owing to alteration of structure in the coats of the stomach, as observed by the author, which are sometimes found in a scirrhus state. (See DISEASES OF THE LIVER.)—ED.



free access to water; and if she is found eating what is improper about the hedges and ditches, she should be put into a barton. My correspondent, Mr. Sumner, informs me that he has met with a great many scouring cattle, but has not known one perfectly cured. He stopped one by giving her a sheep's heart, liver, and lights, all chopped up together; but she died six weeks after, of a complete dropsy of the belly. When I lived at Oakhill, a scouring cow was kept in a field adjoining the house in which I resided. I was surprised to see how much she drank, and how often she was drinking. She appeared cheerful, and had a good appetite; had taken a good deal of medicine of different kinds without any benefit, and was then left to take her chance in this field of tolerably good grass. After a short time, the proprietor permitted me to have her killed for examination, which afforded me an opportunity of seeing the state of the stomach and bowels before the disease had made so much progress as in the cases before noticed. There was the same dropsical appearance, though in a less degree. The dropsy is in the cellular membrane, between the muscular and mucous coat of the bowels; sometimes, however, there is an effusion of water into the cavity of the abdomen.

## CHAPTER V.

## ON POISONING WITH LEAD, COPPER, ETC.

A VERY serious disease has at times occurred in the vicinity of Mendip, and in those parts where the lead mines are worked, which has proved very destructive, not only to cattle, but also to horses, to dogs, and even to poultry. This disorder is termed *minding* by the inhabitants, and animals so affected are said to be *minded*. I have been informed by a respectable farmer of Wookey, who appears to be well acquainted with the disorder, that he has never known sheep affected by it. After heavy rains, the brook which runs through the meadows of Wookey overflows its banks, and covers some of the adjacent lands; and these, after the water has retired, have their grass so impregnated with lead as to be rendered poisonous; and it has been observed that those animals who feed close to the stream, or pick up the long grass on the margin of the water, are most quickly affected: it is said that the water also is poisonous. It seems probable that the poison consists of the carbonate of lead, which is sublimed in immense quantities in smelting the ore, and is carried through the atmosphere to a considerable distance, and deposited very extensively on the surface of the hill. During a heavy rain, this carbonate of lead is washed down in great quantities into the meadows and the brooks, and, gradually subsiding, imparts that poisonous quality to the grass that has done so much injury. A dog has been known to be *minded*, after picking a bone in a meadow that had been thus poisoned. So far does the injurious effects of the lead

mines extend, that the meadows near Wookey-hole have been thus poisoned, though the nearest mine from which the metal could have been derived was situated near Priddy, a distance, I believe, of several miles. The disorder sometimes occurs on different parts of the hill, and especially near the smelting places; from which it has been thought that the deleterious matter consists of the lead ore itself in a state of fine powder. But it is known to impart a sweet taste to the grass, which the lead ore, however finely powdered, has not the power of doing. It must, therefore, I think, be a carbonate of lead, or some saline compound; but how the latter can be formed it may be difficult to explain. If the lead ore contains sulphur, then a sulphate of lead may be sublimed, and diffused to some distance; but I think it more probable that it consists of a light powdery oxide of lead, or a carbonate or super-carbonate. Sometimes the disorder has occurred close to the smelting places. One farmer, the proprietor of a mine, lost fifteen head of cattle by it, that broke down a fence round the smelting place one night and ate freely of the grass round the banks. An intelligent and respectable farmer, of Wookey-hole, also lost eight head of cattle at one time, in consequence of his meadows having been overflowed. This farmer, Mr. Baker, is the same whose sheep I was the means of preserving last summer.

The symptoms of *minding* take place in different degrees, according to the quantity of poison that has been eaten. Nine of the fifteen head of cattle before mentioned, that were lost by one farmer, died within a week after the attack; the others lived longer. Sometimes they go on many weeks with the disorder, and sometimes even months; but it almost always eventually proves fatal. The most urgent and formidable symptom of the disorder is great difficulty of breathing, and such loud wheezing as may be





trices of the brain, and in that manner produce a fatal disorder. When a very small quantity only of the poisonous oxide has been deposited, and only a small portion is taken into the stomach, the effect is somewhat different. In this case, the lead is gradually absorbed by the lacteals, and conveyed into the circulation. The impression made on the stomach is inconsiderable, and the symptoms have not at first a formidable appearance; but such is the nature of this poison when mixed with the blood, that though often slow in its operation, it is always ultimately fatal in its effect; for it is not expelled like the other metallic oxides, such as mercury, by bringing on an increased action of the vascular system, but paralyses all the emunctories, and even the heart itself. The principal symptom produced in this case is epilepsy, or fits, with which the animal may be affected from time to time, and go on gradually declining for many weeks, or even two or three months; but the fits at length become more frequent and violent, and the animal dies in a wretched condition.\* From the information I have collected, and especially from the favourable termination of two cases, in which I have reason to believe the efficient ingredient in the drenches employed was salt, I think it probable that the disorders may be cured by giving the animal as early as possible a solution of four ounces of common salt in a quart of water, and repeating it every fourth hour, until the poisoned food is completely expelled from the stomach and bowels. The effect of the salt may be promoted, perhaps, by clysters of salt and water; and, whenever the symptoms will admit of it, the animal should be kept constantly in motion. In cases where the lead is swallowed in small quantity, and so

\* A depraved appetite is also not an unusual symptom. In addition to these affections, it is also the fact that animals in the neighbourhood of lead mines are very subject to colic.

slowly as to be absorbed by the lacteals and impregnate the blood, there is no chance, I think, of cure. There are no means known by which this poison can be expelled from the blood, when once it is thoroughly impregnated with it.\*

[*Copper-smoke disease* is a name given to a peculiar malady, affecting more particularly the bones, joints, and synovial membranes of cattle and horses in the neighbourhood of copper mines, and supposed to arise from the copper smoke. Mr. Barthé, who has made some personal observations on the disease, observes, "It appeared to be chiefly an affection of the joints, at least it was so in cattle; and it has occasionally assumed this character in the horse. He had traced several cases to the bursal cavities, and to the synovial membranes of the joints, around which there was considerable tumefaction; this enlarged to what, under other circumstances, would be termed a very considerable extent, and there was evidently very great pain. The swelling continued to increase and to fluctuate for a certain time, and often for a very long period, until the fluid began gradually to thicken: from this it passed through various stages of concretion, and at length assumed the character of perfect bone, the joint being to a certain degree ankylosed. He had the opportunity of examining one after death; there was great distention of the synovial membrane, both in the anterior and posterior portion of the knee. It was filled with a strangely organized substance or tumour, extending from one side of the cavity to the other; its interior assuming precisely the honey-comb form, and the cells lined with a black pigment. He saw many cows labouring under this disease; there were thirty belonging to one

\* Mr. Morton recommends as antidotes for the salts of lead, "solutions of the sulphate of magnesia or soda, combined with croton or linseed oil; afterwards allaying the irritation by means of opium. The phosphate of soda has also been recommended."—Ed.



farmer, but they were removed to another locality before he had the opportunity of seeing them. Another farmer had five cows all ill of this complaint; one of them was in a dreadful state. On the following day another of his cows was taken in the same way; then he, too, recognised the influence of the copper-smoke. Some old farmer came to the owner, and said 'If you will allow me to remove the cows, I will cure them.' He was allowed to remove them, and they recovered. These diseases were evidently, according to the common opinion, the effect of the copper-smoke. The wind blew in a direction from the mines over the situation of the cattle, and animals were taken ill a day or two before it began to rain; a circumstance to which a great deal of attention is paid there."

Mr. Ernes observed, that "he had witnessed somewhat similar effects attending the smoke or vapour of zinc. There was at Lieges a large smelting establishment; the ruminants all suffered, and many persons were compelled to give up the keeping of cows altogether." (*Vet.*, May, 1840.) — ED.]

## CHAPTER VI.

## DISEASES OF THE LIVER.

[THE liver of the ox is very frequently liable to disease. We may have inflammation both in its acute and chronic form; besides which we have enlargement of the liver, alteration in its structure, a vitiated state of its secretions, together with that very common disease jaundice or yellows.

*Active inflammation* of the liver is rather a rare disease in cattle; it is brought on by a too plethoric state of the system, arising in some measure from the predisposition of the animal, and an abundant supply of nutritious food. To this may be added exposure to heat or fatigue, sudden change either of the temperature or the food, exposure to cold and wet, and any thing which disturbs or deranges the digestive organs.

Mr. Brown observes, in a valuable paper on the subject, in the *Veterinarian* for January 1840, "In the milch cow the first symptom of this malady is a slight diminution in the usual quantity of milk; and, after it has stood the proper time in the lead, and been drawn from the cream, the latter frequently presents a ropy appearance, and has a saltish taste. As the disease progresses, the countenance is depressed, the appetite impaired; the animal becomes inactive, and has generally a stiffened staggering gait, or a halting on one or more of the limbs.

"The eyes are dull, and occasionally the transparent cornea becomes opaque; the nose is alternately dry and moist; the mucous membranes, the nasal secretion, and the skin tinged yellow. In protracted cases, when the patient begins

to recover, a yellow scurf rises from the skin, which gives the hair the appearance of having been dusted with turmeric. Rumination is partially performed, or altogether suspended. The secretion of milk is extremely limited, and inflammation usually commences in one or more quarters of the bag. Occasionally tumefactions appear in different parts of the body, which afterwards burst, and discharge an ill-conditioned matter.

“In some cases the respiration is at first frequent, which is accompanied with a short sore cough, but in the majority of cases it is not much disturbed. The bowels are generally constipated, often obstinately so; and small quantities of the alvine excretions are voided, covered with a mixture of vitiated bile and mucous; after several days diarrhœa occasionally supervenes. Some cases occur in which the animal is suddenly attacked by violent purging, the alvine ejections are voided in large quantities, of a very dark colour, and are extremely fœtid. During the progress of the disorder, the pulse varies much in frequency, but its tone is generally soft and feeble.”

Mr. Brown considers that the yellow appearance of the membranes does not arise from an absorption of the bile, but that it is rather owing to the inactivity of the liver. Thus the blood is not deprived of that portion of its composition from which the bile is formed; and it is therefore again carried into the system, and thus discolours the membranes. The secretion of bile being diminished, the bowels become constipated, which is generally the case; or it is so altered in its quality as to produce purging.

The *treatment* of this complaint requires considerable tact, so as to apportion the medicine according to the peculiarity and urgency of the symptoms. In general bleeding in the early stages is required; but it must be moderate, though it is often necessary to repeat it. Our chief resource



in this disease must be calomel, which may be given in doses of one to two drachms, suspended in gruel or linseed tea, to which half a drachm of opium and two drachms of ginger may be added. Six or eight hours after this half a pound of Epsom salts, four ounces of sulphur, and half a pint of linseed oil should be given, and repeated in the same or diminished doses in the course of twelve or eighteen hours, unless the bowels are relaxed. In severe cases a blister may be applied to the right side, and a dram of calomel and half a dram of opium, two drams of gentian and one of ginger, and two of nitre, administered in gruel twice a day.

If the case is attended with purging from the beginning, the purgative should be omitted, or not more than four ounces of Epsom salts given; but the same dose of calomel, with double that of the opium, should be repeated morning and night; and if the purging continues obstinate, the treatment recommended for diarrhœa may be put in practice. Thick gruel and starch should be given frequently, as well as astringent injections.

“In chronic inflammation of the liver,” observes Mr. Brown, “the beast is commonly low in flesh; hidebound; the skin slightly tinged with yellow, from which a scurf rises that gives the hair a staring dirty appearance; the eyes are dull, and considerably sunk in the orbits; the ears drooping; the countenance altogether dejected: the animal feeds sparingly, is disinclined to walk, and when made to move the action is listlessly performed. Although the animal is feeding in a succulent pasture, the bowels are often confined, and the excrement is voided stiff and glazed, probably with dark-coloured bile; but in other cases diarrhœa commences. In either state of the bowels, neat cattle will often linger on a life of misery for many months, until they are rendered useless by a disease which probably might

have been relieved if active treatment had been adopted early enough to have arrested the morbid action.

In the confined state of the bowels, many of these cases admit of perfect cure. Alterative doses of calomel, carried off by an oily mixture, often succeed; but cases both of dry-rot and diarrhœa occur, in which the disease will only yield to the influence of calomel, so as to enable the animals to be got into a better state of condition as regards their preparation for the butcher. Many graziers annually endure serious losses from chronic inflammation of the liver. The terminations of acute inflammation of the liver in neat cattle are, morbid smallness of that gland, or a contraction of substance which is of a dark purple colour: the gall-bladder is often found distended with turbid bile of a pale yellow hue. The effect of this variety of termination is chronic diarrhœa, and the alvine excretions are usually of a light colour. Accordingly the liver is found indurated, dry, fragile\*, and of a red clay colour: in which case the animal is excessively yellow; the bowels are unusually constipated; and the excrement resembles, both in colour and consistence, that of a horse living on hay that has undergone too high a degree of fermentation. In morbid enlargement of the liver, that viscus presents various alterations of structure; as a spongy substance, thickened and firm texture, and scirrosities which often contain curdy pus."

\* In a singular and fatal case of acute hepatitis reported by M. Deloge, of Toulouse, in the *Veterinarian* for Sept. 1840, the liver appeared withered and dry, as if it had been exposed during several days to an ardent sun. No other organ was diseased. The previous symptoms of the case were those of such extreme violence that the beast was thought to be mad. The head was extended, the eyes fixed, the shoulders cold, and belly hot; pulse strong and rapid. He would strike his head against his flanks, and endeavour to bite those around him.—ED.



*Jaundice*, or *yellows*, is a disease of rather frequent occurrence amongst cows. Its leading *symptom* is a yellowness of the skin and the eyes, and often of the urine too. It may appear either suddenly or gradually; and may be attended at first either by considerable fever and irritation, or by little apparent derangement of the system. However, as the disease progresses, the animal loses flesh; becomes dull and dispirited; ceases to ruminate; the *faeces* are costive; the milk has a tinge of yellow; the hair falls off, and the animal often becomes mangy; and after some time obstinate purging takes place, which frequently proves fatal.

The cause of these symptoms is an obstruction to the passage of the bile from the liver to the bowels, and a consequent absorption of it into the system, which thus renders the skin yellow. The most frequent cause of this obstruction arises from the presence of gall-stones in the gall-bladder, where they are often found of various sizes, from that of the head of a pin to a large walnut. These substances are formed principally of the solid parts of the bile, and as long as they remain in the gall-bladder do not appear to occasion mischief; but if they enter the duct, and do not pass on into the duodenum, they cause an obstruction to the flow of bile, and thus induce the symptoms we have before mentioned.

Sometimes the irritation of the gall-stone produces spasmodic efforts of the duct to propel it, which may be successful or otherwise, and may give rise to symptoms of irritation and distress. The presence of fluke worms in the liver is supposed to produce jaundice; but this is a matter of doubt, as they have not been seen in fatal cases of this disease. The obstruction to the passage of the bile may arise from disease of the liver itself; either chronic inflammation, or alteration of structure, or tubercles or tumours.



It may also be produced by a morbid state of the small intestines.

The *treatment* of this disease consists in the administration of mild purgatives, which, when given early, generally effect a cure. Epsom or Glauber's salts, in half-pound doses, with a few drams of ginger, repeated for several days, will produce the desired effect. Some give aloes and turpentine in moderate doses, but the salts are the safest purgative. If the disease has been established some time, it becomes much more obstinate in its character; and then the treatment must be modified according to the urgency of the symptoms and the nature of the case. In some instances, the pulse being strong, bleeding may be called for, but must be practised with moderation and caution. If there be any tenderness evinced on pressing the sides, or the liver appear inflamed, a blister should be applied to both sides, but particularly to the right. — ED.]

#### *Inflammation of the Spleen or Milt.*

This is a disease I had never seen when the first edition of this volume was published; nor have I ever met with a book in which it has been noticed, except one, and that is a work published in 1813, by Professor Volpi, clinical professor at the Veterinary College at Milan. He says, "that cattle are subject to a very acute kind of inflammation of the spleen, which generally destroys them in three or four days; though it is not of a contagious nature, for it does not attack other species of animals; nor can it be attributed to marsh miasmata, because it sometimes happens in very dry situations. We generally subdue this formidable disease by free and repeated bleeding; by giving nitre in a quantity of from 2 to 4 ounces a day, to which we may add

2 ounces of aloes and 6 ounces of Glauber's salt." (*Compendio di Medicina Pratica Veterinaria di Gio. Battista Volpi, Professore di Clinica nella R. Scuola Veterinaria di Milano, &c. vol. i.*)

This disease has often occurred in some rich meadows in Somersetshire, situated near a river, by which they are often inundated. The disease was first noticed about six years ago, during a long continuance of very hot and dry weather. It was then attributed to contagion, arising from the putrid carcass of a cow that had been thrown into the river, and suffered to remain in a shallow place until it became very offensive. A great number of cows died that year, particularly on that farm, near the place where the putrid body had remained, and the disease has been occurring from time to time ever since. In every cow that has died they have found the spleen very much enlarged, appearing as if it were bursting with very dark-coloured fluid blood. This was the only morbid appearance they had noticed, until I was desired to examine three cows that were then lying dead of the disorder. I found the spleen as they had described it; also that two or three pints of the dark fluid blood, with which the spleen was distended, had oozed through its investing membrane into the abdomen. The veins of the brain were loaded, and there was a small quantity of extravasated blood in one of the ventricles. One of them, a store cow, was slaughtered, and in her the heart and lungs were not much altered; but the brain and spleen were in the state before described. In the others the heart and lungs, as well as the spleen and the brain, were much inflamed. It is remarkable that every animal which has been attacked by this disease has died, except one, and that one was bled until it became faint. Others have been bled, but never, as far as I know, to that extent.

To avoid this disease, cattle should be brought gradually into rich pastures, and driven out at night to some higher situation, where there is only a moderate quantity of grass, and no water. As to the treatment of the disease, nothing, I think, does any good except bleeding freely and purging.



## CHAPTER VII.

INFLAMMATION OF THE LUNGS, PERIPNEUMONY, AND  
PLEURISY.

A DISTINCTION has been usually made between pleurisy and peripneumony; the former being an inflammation of the pleura, or membrane which covers the lungs, as well as the internal surface of the ribs, diaphragm, &c.\*; the latter an inflammation of the substance of the lungs. Wherever, however, the inflammation begins, if it is not put a stop to by bleeding, it soon spreads. There is another disorder of the lungs, which consists in an inflammation of the membrane which lines the windpipe and its innumerable branches. The name of this disorder is catarrh, or cold; and when existing in a higher degree, it has received a great variety of names, among which are distemper, influenza, felon, &c. These higher degrees of catarrh are attended by fever, and sometimes appear to be contagious. Inflammation of the lungs, whether pleuritic or peripneumonic, will form the subject of this chapter; catarrh, and catarrhal fever, will be treated of in that which follows.

Inflammation of the lungs † is most commonly brought

\* Pleurisy, when it exists without peripneumony, is frequently connected with rheumatism and affections of the joints.

† This disease is considerably less frequent in cattle than in the horse, owing to the less demand made on their organs of respiration, and their comparative freedom from severe exertions. When it does arise, it is generally produced by sudden change of situation, as from a dry to a damp locality; although it may be caused by over-exertion,

on by driving cattle improperly when they are in good order, or fat. It is brought on also by keeping them too well,

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particularly when the animal is in a state of plethora. Young cattle are much more liable to this disease than older ones, particularly calves. In many districts, this disease is designated fog fever or sickness, from the circumstance of cattle being affected on being turned into fog lands.

The disease consists of inflammation of the substance of the lungs affecting the air-cells as well. Those marked distinctions, however, between the different inflammatory affections of the lungs are by no means strongly exhibited in cattle. Pleurisy, or inflammation of the membrane covering the lungs and lining the chest, is seldom met with, and, when it does exist, is generally complicated with inflammation of the substance of the lungs.

The *symptoms* of this disease are, in many respects, similar to the same affection in the horse; but, on some points, there is a striking difference. We have a quick and laborious breathing in a more striking degree than in the horse; but the pulse is not usually much quicker, and is sometimes full and strong, but more frequently weak. From the greater abundance of cellular and adipose tissue in the legs of cattle, the warmth of the extremities is more readily preserved; and we therefore rarely find that deathly coldness, except in the latter stages, that forms a leading symptom in the horse in this disease. Another important distinction is, that cattle do not, like the horse, obstinately stand up, but are frequently found lying down; and, indeed, calves always do.\* This is owing partly to the speedy loss of strength in cattle, from the comparative weakness of their nervous system, and partly to the circumstance that they can breathe much more freely than the horse in a recumbent posture. To these symptoms it may be added, that rumination ceases, the mouth feels hot, and the membrane of the nostrils appears red.

The *treatment* of this disease consists of extensive blood-lettings, aperient and febrifuge medicine, and counter-irritation. The bleeding should be continued till the pulse falters; from four to six quarts or more may thus be abstracted, and repeated in six hours if the symptoms are not relieved and the pulse is not too weak. In the horse, we know, it is very dangerous to administer aperient medicine in this disease; but, from the different structure of the alimentary and digestive organs

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\* This circumstance is particularly pointed out by Mr. Fryer in a useful essay brought before the Vet. Med. Association in 1840.

or feeding them too hastily. The symptoms are, quick breathing, which is seen by the quick motion of the flanks; dullness, and hanging of the head and ears; hot horns, es-

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in cattle, not only is there no evil, but, in fact, much benefit to be derived from saline laxatives. Half a pound to a pound of Glauber's or Epsom salts may therefore be given, and repeated in the course of twelve hours; after which four drams of nitre and one of tartarized antimony may be administered twice a day. Setons of black hellebore should be placed in the dewlap and the sides. Some advise blisters to the chest; but, from the insensibility of the skin in cattle, vesication is not readily obtained. In very severe cases, however, the sides may be fired as well as blistered, as in the following successful cases related by Mr. Lord. The treatment, too, which he found successful, may also be practised in cases presenting the same character.

Although the pulse is not usually increased, yet sometimes it is so, as in the following cases related by Mr. Lord in the *Veterinarian* for July, 1841, in which the disease appears to have presented a severe character:—"In the latter end of last April, the Earl of Kingston sent for me, and told me that his cows were dying very fast from some disease that had been in his farms for the last year, and which his steward believed to be incurable. After a minute examination, I found the symptoms as follow:—Pulse, in almost all that were affected, from 90 to 120, but very small; horns, ears, and legs cold; the animals heaving violently at the flank, and grunting as if in great pain; also grinding the teeth. With the stethoscope I could discern the bronchial respiration in some, and the mucous *râle* in others.

"*Treatment.*—In the early stage I bled largely, notwithstanding that the pulse was small, as I consider that this arises from pulmonary congestion, which bleeding removes. I next fired and blistered the sides, and gave white hellebore half a dram, morning and night, as long as they could bear it; and changing it then for tartarized antimony and nitre, keeping the bowels open by occasional laxatives. With this treatment, I cured four out of five of the beasts which the steward and attendants considered as sure to die, and I have more recovering.

"A gentleman, also, who lives near to me, and who had lost seventeen cows with it, had tried a great many remedies, but had not saved a patient. He asked me to look at the two last of his stock, and which were very ill with a similar disease; telling me, at the same time, that I might try any experiment I wished on them, as he knew they would not recover. To his great astonishment, and with the above treatment, I had them well for him in ten days."



pecially towards the roots ; nose hot and dry ; loss of appetite ; and quickened pulse. Nothing but early and copious bleeding can possibly save the animal ; after which it may be turned into a field where there is but little to eat, and where it can be sheltered from the heat of the sun, or from cold and rain ; or when that cannot be done, it may be kept in a barton, or cow-house, and fed sparingly on grass, bran mashes, whey, and only a small quantity of the best hay ; and in this last situation it will be proper to give the beast the saline opening drench, that is, eight to twelve ounces of Glauber's or Epsom salt ; and if that cannot be had, four or five ounces of common salt. The animal must be kept very low until the disorder is completely removed, and then it should be got up again very gradually.

## CHAPTER VIII.

CATARRH, COLD, HOOSE, EPIDEMIC CATARRH, AND  
INFLUENZA.

CATARRH prevails most in the spring of the year, when the wind is easterly, and the weather wet and cold. It is caused also by sudden changes from heat to cold, or the contrary; drinking freely of cold water after being heated by exercise, or by being driven. Sometimes it comes on without any perceptible cause, and sometimes prevails in such a degree as to appear to be contagious. It is then called influenza, or distemper. The symptoms are, cough, hanging of the head and ears, diminution or loss of appetite, and quick pulse; and the animal generally separates from its companions. After a short time there is generally a discharge from the nostrils, and sometimes soreness of the throat and difficulty of swallowing. When these are the symptoms, there is great debility, and loss of flesh. The disease sometimes degenerates into consumption, scouring, and atrophy. Bleeding is the first remedy; but though it is frequently desirable at first, yet if there is much weakness, and nasal discharge or purging, it should be abstained from. The animal should be placed in a sheltered field, or good cow-house, or barton. A field, however, is the best situation, if the weather is at all favourable. If the animal is kept in a house, and there is no grass for it, bran mashes are the best food; and it will be proper to give six or eight ounces of Epsom salt in a quart of whey. If the disorder continues after this, small doses of nitre may be given in a little gruel. This

disorder, though confined at first to the mucous membrane of the throat, nostrils, and windpipe, often spreads to the whole substance of the lungs when improperly treated, or when the animal is exposed to wet and cold weather. Catarrhal disorders depend upon a suppression of those natural discharges by which the blood is depurated. These outlets being obstructed in some degree, the blood is determined to the mucous membrane of the throat, nostrils, windpipe, and lungs, and sometimes to the mucous membrane of the bowels also. Bleeding is necessary to lessen the quantity of this impure blood, and thereby relieve the heart, and diminish its action; while the saline purgative determines the blood to the bowels, and thereby relieves the lungs, which are of more importance, and more easily injured than the mucous membrane of the bowels. The nitre, which is directed to be given afterwards, determines the blood to the kidneys, and causes an increase of urine. In both cases, grass is the best food, and a sheltered field the best situation, when the weather is at all favourable; and when there is no grass, bran mashes, and a little of the best hay, are the best substitutes.

When catarrhal disorders prevail much, it is probable they are infectious; great care should therefore be taken in separating the sick from such as are healthy.\* Setons in the dewlap, and near the throat, may be employed when there is great difficulty in swallowing; or the throat may be

\* When catarrh assumes an epidemic form, it is generally more severe, and there is a greater tendency to debility. In these cases, vegetable tonics, such as gentian and ginger, are more particularly called for as adjuncts in our treatment.

The *murrain*, which many years since proved so destructive amongst cattle, was an epidemic catarrh of a low typhoid form. It appeared to be malignant from the first, being attended with great debility, and soon ran on to gangrene. A voluminous history of this disease may be found in Mr. Youatt's work on Cattle.



blistered. When the difficulty and quickness of breathing continue after bleeding freely, the bleeding should be repeated, and the sides extensively blistered.

*Blistering Liniment.*

Powder of cantharides	-	-	-	1 oz.
Olive oil	-	-	-	6 oz.
Oil of turpentine	-	-	-	2 oz.

Mix.

## CHAPTER IX.

## DISEASES OF THE MOUTH.

THE mouth and its contents are subject to various diseases in cattle, though not, as in horses, exposed to injuries from the bit.

Simple inflammation of the mouth is more frequently a symptom of other diseases than a disease itself. It is, however, noticed as such by a late French writer on cattle pathology, M. Gellé, who says he has often been consulted on account of oxen with a hot burning mouth, the tongue red and palate swollen, and thick viscid saliva running from the mouth. There is a disgust for food. The disease appears in the spring, and is owing to plethora or too high condition. It is often attended with slight inflammation of the stomach and intestines.

The *treatment* consists in bleeding, laxatives, and gruel.

*Thrush*, or *aphthæ*, commences with inflammation of the mouth; but it consists in numerous small vesicles, which burst and become ulcers. The mouth is of course exceedingly sore, and the ulcers may even extend outside the lips. M. Gellé considers this disease to arise from the use of damaged food, bad water, plants covered with dew, and also from change of temperature. The treatment at first is very simple, consisting merely of a little cooling physic and the application of a solution of alum to the mouth; but if neglected the ulcerative process sometimes extends in an alarming degree, and there is great danger of mortification. M. Gellé relates a formidable case of this kind, which was

given up as incurable by an empiric, but which he cured by bleeding and the application of stimulating lotions and caustics to the mouth.

Sometimes this disease takes an epidemic form on the Continent, though rarely so in this country. It then becomes more severe, and attacks the throat as well as the mouth, and is rendered highly dangerous by this and other general inflammatory symptoms. The disease is soon attended with great debility, and forbids much depletion.

The *treatment* consists of gargles, injections, fomentations to the abdomen, opium in small doses, and vegetable tonics. The disease, as an epizootic, is often very fatal.

*Blain*, or *gloss-anthrax*, is a more formidable disease than the thrush. It consists principally of inflammation of the tongue, and is accompanied by loss of appetite and rumination, a dull appearance, and a discharge of saliva from the mouth. This discharge, at first natural, becomes bloody and very offensive as the disease progresses. Under the tongue we find large bladders or vesicles containing a serous fluid; these bladders, which extend by the side and occasionally above the tongue, break and form extensive ulcerations, and sometimes end in mortification. Sometimes the head and neck swell so as to obstruct the breathing, and even produce suffocation. This disease may either be very slight, or exceedingly formidable and fatal; and when it ends in death we usually find considerable disease of the œsophagus, the first and fourth stomachs, and the intestines.

The *blain* often appears as an epidemic, and is believed to be very contagious. It has carried off vast numbers of cattle on the Continent, and a disease very similar to it has prevailed in this country during the last two years to a considerable extent.\* The cause of blain is very obscure.

\* See EPIDEMIC DISEASE.



Mr. Mogford of Jersey believes that it often proceeds from eating particular plants, as the crow-foot, and the various species of ranunculus.

The *treatment* of this disease is generally very simple, unless it assumes a malignant and typhoid form. The bladders must be freely lanced. Mr. Youatt, who has written an excellent account of this disease in his work on Cattle, says, "that this alone, if practised early, will in many cases effect a cure. A solution of salt or alum may be also applied to the part; if, however, there is any offensive smell, a lotion consisting of one dram of chloride of lime to a pint of water should be applied to the mouth by means of a sponge. When there is considerable fever and the pulse is strong, the animal should be bled; but this must not be done in the latter stage. A pound of Epsom salts may also be given dissolved in water; and if much constipation is present, injections may also be employed." Sometimes ulcers form at the heels of the foot and between the clefts (this was a common symptom in the late epidemic). The chloride of lime should also here be applied, the part being freely exposed; and sometimes it is necessary to employ a caustic, such as the muriate of antimony, or muriatic acid with tincture of myrrh. When there is much debility, good gruel should be given, and with it gentian and ginger in doses of two drams each. —Ed.

## CHAPTER X.

## DISEASES OF THE BRAIN.

*Inflammation of the Brain, Phrenzy, Mad Stagers.*

THIS disease is known by a furious delirium, or madness, which generally comes on gradually, and should be noticed when approaching. It arises from an excess of blood, which first causes heaviness or stupor, hanging down of the head, &c.; which gradually increasing, becomes delirium, or madness. The eyes appear inflamed, and sometimes fierce. After furious exertions, the animal sometimes falls down, and lies for some time either senseless or struggling. After a time it gets up again, and appears more quiet; but the paroxysm soon returns, and terminates in death.\* If the approach of the disorder is observed, it may be stopped by copious bleeding. A purging drench may also be given, and the animal should be turned into bare pasture.† If it is not observed until the paroxysm or deli-

\* Inflammation of the brain is sometimes brought on by the cruel and dangerous practice of driving cattle, until they become furious, through the streets of London.

† If the symptoms are very severe, it will be impossible to administer a bulky draught. In this case half a dram of croton seed or oil may be administered in a little gruel; and if the thirst is great, Epsom salts may be dissolved in water and offered to drink.

It is very important to distinguish the symptoms of this disease from those of rabies; as a mistake in the one instance may be fatal to the attendant, and in the other to the animal. The symptoms of rabies will be found under the head of that disease in the dog, which may be compared with those mentioned in the following instructive case of inflammation of the brain, communicated by Mr. Hayes to the *Veterinarian*, vol. x. p. 7. :—"On the 2d of May, 1827, I was returning from visiting

rium has taken place, there will be some difficulty in bleeding; when the beast is secured, if the arteries cannot

a patient, when on coming to a place called Huf Green, in the township of Ashley, Cheshire, I was surprised at seeing about twelve men chasing a cow with long poles, ropes, &c., endeavouring to entangle her and throw her down, in order that they might kill her. She had calved about two months before: she roared and tore about most hideously. I inquired the cause of all this; and was told that she began to be in this way in the morning, but had shown symptoms of being unwell a day or two before; that she had completely torn all the timber down in the inside of the shippen that morning, and roared and slavered most frightfully, running her head against anything that came in her way; also, that there had been in the neighbourhood seven other cows the same way within the previous three weeks, all of which had been shot; that there had been a strange dog killed close by, which they thought was rabid, and which they supposed had bitten these cows. When the first cow began to be ill, they sent for a practitioner at Knutsford. This gentleman was of opinion that the cow was rabid, and ordered her to be destroyed, and which order was issued against the present cow. I waited till she was got into the barn, tied fast down, and secured; I then asked the owner if he would allow me to examine her, to which he consented. The pulse was so fluttering and quick, that I could not count it; the pupils were exceedingly dilated; the mouth foaming; the tongue protruding out of the mouth; and very quick and short respirations. The action of the heart could be felt in every part of the body, with such convulsive jerks as to shake the whole frame so violently that it might be seen and heard at a considerable distance. I signified to the owner a desire to try what I could do by the effects of two or three days' treatment; and he readily agreed I should do what I thought proper with her. I immediately opened the jugular vein, and let the blood flow until the strong action of the heart ceased, and the people about me thought she was dying. I then inserted a seton on each side of her neck, from the poll down to the parotid glands; dressed the setons with unguent. lyttæ, and rubbed all the top of the head and neck with the same. I gave her potass. nit.  $\zeta$ iv., supertart. potass.  $\zeta$ iv., ol. castor  $\zeta$ vi, antim. tart.  $\zeta$ iss., sodæ carb.  $\zeta$ iv., Glaub. salts  $\zeta$ viii., with prussic acid three drops; this to be given three times a day in gruel; also six quarts of gruel to be horned down three or four times a day. After taking five doses she began to purge much black and very offensive matter; on the third day she began to eat a little hay and mash, and from this time she recovered. Her owner kept her three years after, during which time she continued



be opened, both neck and veins should be opened *as quickly* as possible; for by keeping the neck corded without opening the vein, we increase the quantity of blood in the vessels of the brain, and endanger their bursting.

*Purging Drench.*

Take of Barbadoes aloes		from $\frac{1}{2}$ oz. to 1 oz.
Carbonate of potash	-	from 2 dr. to 4 dr.
Glauber's salts	-	from 6 oz. to 8 oz.
Water	-	- 1 quart.—Mix.

*Apoplexy* is more sudden in its approach than inflammation of the brain, being a determination of blood to this organ, and very frequently nothing is noticed until the animal falls. It struggles with great violence, breathes with difficulty, and dies sometimes in a few minutes, or in a few hours.\*

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healthy: she was at last sold to the butcher, after being fattened. I attended four other cows directly after this in the same neighbourhood; they had the same symptoms as those I have just described; all of whom, by similar treatment, recovered."—ED.

\* A disease very similar to those we have described is met with on the Continent, where it has proved very fatal. Its symptoms are thus described by Professor Gellé, of Toulouse (*Veterinarian*, vol. xii.):—"Two days before the animal becomes decidedly ill, he carries his head low; he does not eat half his usual allowance, although apparently with the same appetite; he creeps slowly along far behind the rest of the flock; he scarcely regards the goad, and he is little occupied by the objects which surround him. Although the sense of sight is actually little affected, a spectator would say the animal was blind. It is by this that the farmers know that the beast is attacked by this disease. The animal gradually becomes worse; and on the third day the conjunctiva is red and inflamed, and there is a considerable discharge of tears. On the fourth day the ophthalmia is intense; the lower lid is reversed, the weeping still increased; the lucid cornea becomes opaque; the pituitary and buccal membranes are red; an abundant discharge of mucus proceeds from the nostrils, and of viscid saliva from the mouth; while deglutition is become impossible. On the fifth day the inflam-

Bleeding should be immediately resorted to from the jugular veins or the temporal artery, and as much blood taken as well can be. After this, if there appear any chance of success, an active purgative may be given.

mation has attained to such a point that the eyes are surrounded by a red projecting ring, the consequence of the reversement of the eyelids; the central portion of the lucid cornea yet apparent is very small; sometimes opaque, yellow, thickened, and at other times preserving its transparency. A thickening of the pituitary membrane gives a whizzing sound to the respiration, and sometimes the difficulty of breathing is extreme; an infectious and bloody discharge runs from the nostrils, and occasionally brings with it portions of the mucous membrane, and the patient is threatened with instant suffocation. At this period of the disease the animal is lying down and getting up every moment; he can no longer breathe, except through the mouth; he cannot swallow, at least without great pain, even the gruel which is administered to him; and if the inflammation attacks the larynx, the oppression and difficulty of breathing are intolerable; the whizzing sound of the breathing is changed for one of stertorous character; the nostrils are dilated; the mouth is open, the tongue hanging from it; and the sufferer is continually directing his muzzle to his side. He now rises with difficulty, staggers as he crawls along, and at length suddenly falls. He lies for awhile with his head stretched on the ground, or oftener doubled on his flank, and dies. On examining the body after death, the entrance to the nostrils is found in a putrid state, and the cavity itself excoriated, and its membrane thickened. The throat, the sinuses of the head, and the windpipe are also dreadfully diseased; and the brain is also extensively affected, sometimes indurated and diminished in size, at others softened and dropsical."

The treatment which was found most successful by M. Mullan, who communicated the facts to M. Gellé, consisted of large and repeated bloodlettings, cutting off one or both horns to abstract blood locally; setons in the neck; fumigations to the nostrils; poultices to the head; and injections. Many cases submitted to this active treatment recovered, whilst others in which it was neglected died.



## CHAPTER XI.

## DISEASES OF THE NERVOUS SYSTEM.

*Locked Jaw, Tetanus, Joint Yellows, Tail Rot or Palsy.*

LOCKED JAW in cattle is generally the effect of wounds; and I have known one case which appeared to be produced by the animal breaking off one of the horns at the root. Plentiful bleeding is the first remedy; and if the jaws are not so completely closed as to prevent a drench from being given, let the following remedy be administered, and its effect hastened by throwing up a clyster. The jaws, as well as the muscles of the neck, when they are affected, should be well rubbed with some warm liniment; and afterwards covered with fresh sheep's skin, the flesh side inwards. This will keep up a copious perspiration from the parts. Pouring cold water over the body has been recommended; that is, continuing to throw it over the animal by means of a bucket. Should the disorder continue, one or two ounces of tincture of opium may be given in beer or brandy and water\*, and a solution of three or four drams of solid opium in a quart of water may be thrown up as a clyster.

*Joint Yellows, or Tail Rot.† Palsy.*

This disorder is often a consequence of, or an attendant on, that stage of scouring or scantering which is named

\* It is necessary in this disease to open the bowels; for which purpose forty drops of croton oil may be given in a pint of linseed oil, and be repeated, if necessary, in smaller doses, with the opiates advised above. For a further account of this disease, which is rare in cattle, reference may be made to the author's work on the "Diseases of the Horse."

† The disease which receives this absurd denomination is neither



the scouring rot. It arises from exposure to cold, &c., and can be remedied only by change of situation and

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more nor less than palsy, either partial or complete, of the hind extremities. It is produced by exposure to cold, and frequently appears a short time after parturition, and is frequently connected with rheumatism. The disease occurs mostly in wet marshy countries, and its approach may be either sudden or gradual, and the attack mild or severe.

The *symptoms*, according to Mr. Youatt (*Veterinarian*, vol. ix.), are the following:—"When it appears gradually, the animal will cease to feed; he will stagger as he walks; he will almost drag his feet behind him, or the pastern will be flexed forward; it will bend to the ground, and the animal will walk upon it. The weakness will gradually increase during a day or two; he will struggle against the complaint as long as he can; the weakness will be referable to the hind legs principally or altogether; it will shift from leg to leg, until at length he will fall, utterly unable to rise again.

"At other times the attack will be more sudden; it will be so especially with milch cows, that have been housed in the winter and turned out too early in the spring. It is scarcely credible what mischief one cold sleety night will effect. The cows are left perhaps apparently quite unaffected, at all events with nothing very serious the matter with them; and on the next morning five or six will be chilled, palsied, and will continue helpless during several weeks. When they are once down, it is impossible to calculate how long they will bear up against the debilitating influence of the disease. The appetite will return, and become as good as ever; and these miserable animals will drag themselves along many a yard on their chest and belly in search of food."

This disease is somewhat similar to that of joint felon. It is generally rheumatism in the first place, which ends in palsy, and is often complicated with inflammation of the membranes of the heart and chest, that being the same class of membranes affected as in rheumatism. The affection of the tail is altogether supposititious; what is taken for disease is nothing more than the natural structure of the part, which, from its resemblance to the union of the thong and handle of a whip, enables the cow to use it so readily in keeping off flies.

The *treatment* of this disease must be very similar to that previously described. The animal should be bled freely at first, and, unless the bowels are relaxed, a purgative combined with a carminative should be given and repeated as required. The animal should be comfortably housed; the loins should be well stimulated or blistered, as well as any other affected parts; and setons inserted in the dewlap. The diet should consist chiefly of mashes.—ED.

food, a warm sheltered field, or in cold weather a warm barton or cow-horse, with straw to lie down in, and bran mashes with a little malt, and a moderate quantity of good hay. An opening drench is always the best medicine that can be given at first, and afterwards half a pint of beer morning and evening, with a little ginger. But if there is scouring, then the cordial astringent drench prescribed for that disorder must be given. The symptom which causes this disorder to be called tail rot is an inability to lift the tail in dunging and making water, in consequence of which the tail and hind parts become very filthy, or covered with dung, by the lateral motion of the tail. There is also tenderness upon the loins and about the rump, and tightness of the skin covering those parts. From an opinion that there is a worm in the tail which occasions all this mischief, cow-doctors make an incision of two or three inches in that part of the tail where there is most weakness, or where the joint appears to be loosest. In a day or two the sore in the tail becomes painful, and induces the animal to make more exertion to move it about; and the warm stimulating drenches that are given, with the improvement in keep, sometimes strengthen the muscles which move the tail, and moderate or stop the scouring. This cure, which is seldom more than temporary, is attributed to the removal of a worm in the tail, which had no existence but in the imagination of the cow-doctor.

The treatment to be adopted, when this symptom is observed, is to give the drench No. 1., prescribed for *red water*, and afterwards the cordial astringent drench, as directed for scouring; a sheltered field, or warm cow barton, or cow-house, according to the weather and season of the year; and a diet of bran mashes, with a little malt or gurgings, and a moderate quantity of the best hay, is the

best that can be done. It is to be regretted that proprietors of cattle should be so neglectful as they generally are of the means of preventing these disorders, and of curing them on their first appearance. The first process is by far the easiest, and most profitable: the second is generally successful; but if the disorder be not attended to at this period, the expensive drenches commonly resorted to may protract the fatal termination, or produce a little improvement, and that is all they can do; nor can they do this unless the animal be placed in a proper situation, and allowed wholesome food.



## CHAPTER XII.

## DISEASES OF THE KIDNEYS AND URINARY PASSAGES.

THE *red water*, as it occurs in young stock, and working oxen, when put up into good pasture, or spring pasture where artificial grasses abound, and are beginning to shoot, does not come strictly under this denomination, but is rather to be considered as arising from repletion of the blood vessels. Acute inflammation of the kidneys may be produced by blows on the loins, strains, or violent exertion, by one riding or ramping upon another. The most conspicuous symptom is a frequent desire to void urine, which is done with difficulty, and in small quantity. And instead of being transparent, and nearly limpid, it is bloody, or dark-coloured.\* Bleeding freely is the first remedy, and then the saline opening drench should be given. When the urine continues bloody, or of a red colour, after the pain and difficulty are gone off, and the animal voids it less frequently, and in larger quantity, the astringent drench should be given. The state of the bowels, however, should

\* *Hæmaturia*, or *bloody urine*, is a very different disease from red water, though too frequently confounded with it. It may be distinguished from it by the appearance of actual blood in the urine, in a state of coagulation; and there is generally a greater degree of fever present, and often tenderness across the loins. It also generally occurs in oxen in good condition, whilst red water is usually found in milk cows.

The treatment of this disease consists in bleeding to a greater extent than in red water; purgative medicine; sheep-skins, or stimulants applied to the loins; emollient drinks, such as linseed tea, in large quantities, together with opiates.

In the Veterinarian for February, 1840, there are some cases of this affection detailed by Mr. W. Rush of Harleston, in which, after treating

always be attended to, and costiveness avoided or removed when it takes place.

*Saline Opening Drench.*

Epsom, or Glauber's salts	-	-	-	6 to 8 oz.
Water	-	-	-	1 quart.
Castor oil	-	-	-	4 to 6 oz.

Mix for one drench.

*Astringent Drench.*

Powdered Catechu	-	-	-	2 drachms.
Opium	-	-	-	$\frac{1}{2}$ drachm.
Alum	-	-	-	3 drachms
Ginger	-	-	-	1 to 2 drachms.
Water	-	-	-	$\frac{1}{2}$ a pint.

Simmer the ingredients in the water for a few minutes; and when removed from the fire, add half a pint of good strong beer or ale. This drench may be repeated if necessary.

*Stoppage of Water, Retention and Suppression of Urine, Strangury, &c.*

Stoppage of water, as it is commonly called, both in cattle and horses, often, perhaps generally, depends upon the stomachs and bowels being loaded, or blown up with

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the cases some days without amendment, he adopted the plan of stimulating the kidneys with success, by administering the following draught at first twice, and afterwards once a day:—

Oil of juniper	-	-	-	$\frac{1}{2}$ oz.
Oil of turpentine	-	-	-	1 oz.
Tincture of opium	-	-	-	1 oz.

In a pint of linseed tea.

Under this treatment the bloody discharge was at first increased, but afterwards diminished daily.

air. In the cow, it is from the first stomach, or rumen, being loaded or blown up ; in the horse it is generally the large bowels that are loaded ; in both cases, the urine is stopped by the bladder being pressed downward, so that its neck rests upon the bones which form the brim of the pelvis, and is thereby completely closed. Pregnant cows, during the latter period of gestation, are subject to stoppage of urine, when tied up, and fed wholly on hay, and especially when fed too liberally on grains. Clysters are useful in this complaint, and the anodyne opening drench prescribed for *red water*, that is, the drench marked No. 1., or the following, when that drench cannot be had in time.

Common salt	-	-	-	4 oz.
Flour of mustard	-	-	-	a table-spoonful.
Water	-	-	-	1 quart.

A little grated ginger may be added, and a pint of strong beer ; the clyster should never be omitted. There is no difficulty in passing the fore-finger into the bladder of a cow or a mare, and letting the urine flow off. A flexible catheter is now sold, which can be used to discharge the urine both in the male and the female.



## CHAPTER XIII.

## DISEASES CONNECTED WITH PARTURITION.

*Slipping Calf, Slinking, Abortion.\**

THIS is most probably occasioned by tying up cattle, and feeding them on bad hay, or stale grains, and should, there-

\* Of all animals with which we are acquainted, cows are by far the most liable to abortion. Why this should be it is impossible to say. Sometimes it is produced by blows, or by being worried by other cattle; still more frequently it is caused by the smell of other cows that have recently aborted, and often it occurs without any visible cause. A cow that has aborted once is very likely to do so again, and thus it has happened that on particular farms, the habit of aborting has been kept up and communicated from one cow to another for a vast number of years, and proved a source of great loss to the proprietors. Sometimes it has prevailed almost as an epidemic, a great number having been affected at a particular time. In some instances this has been attributed to want of water, in others to the heat of the weather, or the severity of the previous winter; but in many instances no cause whatever could be assigned. Too high condition has been considered as a cause, and indeed any thing that produces excitement in the system, amongst which fright is a very fertile agent.

Before a cow casts her calf, she appears dull, off her feed, and ceases to ruminate. A yellow glairy fluid is discharged from the vagina, which is a sign which rarely deceives. These symptoms may appear for several days, or may soon be followed by labour, which is generally more difficult than common, and is sometimes attended with danger. The calf is generally dead before it is born, and when not so, it rarely lives. This, however, much depends on the fact of the cow being near her full time or otherwise. Indeed, unless the calf is less than seven months old, we cannot term it an abortion, but a premature labour. When abortion is threatened, it is desirable to endeavour to prevent it by lowering the excitement of the system; by bleeding, and purgative medicine, and keeping the cow as quiet as possible. In addition to this,

fore, be prevented by pursuing a better method. Feeding on unwholesome food, with want of exercise, occasions indigestion and flatulency, and this probably so disturbs the young calf in the uterus, as to cause either abortion, or such an alteration in its position, as renders delivery difficult, and often impracticable. When a cow slips calf, and any thing offensive is left in the field or barton, other pregnant cows smelling it are liable to meet with the same. Every thing that is of an offensive smell, especially putrid flesh or blood, should always be carefully removed. In Gloucestershire they suffer the cows to eat the after-birth, and it is supposed to be useful.

In the 6th vol. of *Instructions et Observations sur les Maladies des Animaux Domestiques*, by Chabert, Flandrin, and Huzard, there is an excellent paper on this subject, being the result of the observations of several eminent veterinary surgeons. From this it appears, that improper feeding is by far the most common cause of abortion; and though impure water has been thought the cause, it is more probable, I am inclined to think, that it depends upon the large quantity of such water they drink, and the improper quantity of food they are thereby led to eat, than upon any peculiar quality in the water.

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Mr. Youatt, in his excellent work on cattle, recommends half a drachm of opium, and half an ounce of spirit of nitrous ether. If, however, the calf is dead, which can generally be ascertained by the fetid smell from the vagina, bleeding should only be employed when there is considerable fever, and some carminative medicine may be given with a mild aperient; but no opiates should be administered. It is requisite to bury the calf as soon as possible, and the parts of the cow should be washed with a solution of chloride of lime, which may also be injected within the vagina. The cow-house should also be washed with the same solution, and the cow should by no means be allowed to join her companions till six weeks or two months afterwards; indeed, it will be the wisest course to fatten and sell her. — ED.

*Parturition and its Consequences.\**

[The average period of gestation in the cow has been ascertained, by Earl Spencer, to be 284 or 285 days; the longest period under his observation was 313, and the shortest 220 days. He also found that when gestation was longer than the average, the greater proportion were bull calves. After three or four months the symptoms of pregnancy are usually very evident; but before this, although it is very desirable to ascertain the fact, it is somewhat difficult to do so. The most certain method of judging, is by passing the hand into the vagina; but this is very objectionable, as it is liable to produce abortion. It is a much preferable method to pass the hand into the rectum, and feel for the uterus and its contents. In many cases, however, the beating of the foetal heart may be heard, by applying the ear to the flanks. It will be found beating much more rapidly than that of the mother, and by this method pregnancy has been detected when the foetus has been under two months old.

A cow in calf should be fed neither too high nor too low; in one case there will be an insufficient supply of milk, in the other much danger of inflammation. If the cow be poor, she should not be milked for some time before calving — perhaps two months; whilst for one in good condition, half this period is a sufficient cessation. If the cow be fat, she should have a dose of physic before she calves, and her food should be moderate, and by no means stimulating. A swelling of the parts, and a glairy discharge, together with restlessness, and quick breathing,

\* For the management of the cow prior and subsequent to parturition, the reader is referred to the article in Chap. XXV., On the Managing of Milch Cows, translated from the French of Professors Chabert and Huzard.



are the immediate precursors of labour; and, generally speaking, this process goes on in a proper manner, and requires no assistance. If, however, it is much delayed, it is desirable to ascertain if the parts are coming in a natural position. Sometimes it will be found that the fore legs are doubled back, in which case they require to be brought forward. At other times the head is bent back over the shoulders, and there is danger of suffocation. It is necessary then to push back the body of the calf, and to bring the head forward, to effect which it is sometimes requisite to slip a noose over the under jaw of the calf, but this should be avoided if possible. Sometimes all four feet are presented together; the hind ones in this case should be forced back, and the fore ones brought forwards; but if this cannot be done, we should endeavour to bring the hind ones first. Sometimes the fœtus is found lying on its back, and the tail presented first; it should be turned if possible, but this is seldom practicable. The body should therefore be pushed back, and the hind legs carefully brought forward, to accomplish which it is often necessary to use cords.

There are various other unnatural presentations, a full account of which may be found in a work by Mr. Skellett. The natural presentation is well known, being with the fore feet first, and the head resting on the fore legs.

It is better generally to abstain from either mechanical or medicinal assistance, unless imperatively called for; but when the womb is unable to discharge its contents, and the throes are diminishing, or perhaps ceasing, much benefit may be derived from the administration of the ergot of rye, which appears to act as a stimulus specifically on the uterus: two drachms of this medicine finely powdered may be given in a pint of ale, and repeated several times, if called for, with intervals from half an hour to an hour.

When the calf is dead, and the presentation unnatural, it is often necessary to extract it in portions, by passing up a knife guarded by the finger, and cutting off the shoulders and hind limbs.

Labour is very frequently prevented by a scirrhus state of the os uteri, or entrance to the womb, and it may sometimes be observed, that after the pains of labour have continued for some time, one foot may be found on examination in the vagina, and the entrance to the womb closely contracted upon it. In these cases, the Cesarian operation has been performed, which consists in extracting the calf through an opening made in the flank. This operation, however, is attended with much danger and difficulty; and a much better and more practicable method of relief consists in division of the os uteri. It is thus described by Mr. James Horsburgh of Dalkeith, in the *Veterinarian*, for June, 1840: —

“The scirrhus degeneracy of the neck of the uterus, which was supposed to have rendered the Cesarian operation necessary, is not uncommon here, and numbers of cows are yearly lost from it. It is called by the country people *lyreing*. It seems to be a diseased state of the os uteri, which during gestation sometimes assumes a cartilaginous hardness. At the period of parturition nature is unable to dilate the opening sufficiently; and unless proper assistance can be rendered, the animal is lost. This can only be done successfully by the division of that structure, of a few cases of which I beg to send you an account.

“January 20th, 1836, I was called to attend a cow belonging to Mr. Hunter of Otterstone. She had been very ill two days. I found her unable to rise, and viciously turning her head, and endeavouring to strike every one that came near. The pains had ceased. I found that one foot had passed the os uteri, and was informed that it had



made no progress during the time she had been ill. I had some difficulty in returning it, and found I could only introduce my fore-fingers through the opening. I lost a considerable time in the vain hope of dilating the passage with the hand, but not the least impression could be made on the hardened substance; I then determined, at whatever risk, to divide the stricture. For this purpose I used a small, short, and sharp-pointed bistoury, which I introduced (the point guarded by the fore-finger, and firmly held between the finger and thumb) as far as I could pass it into the uterus; and then by turning the edge into the cutting position, I made an incision through part of the structure, laterally by drawing the bistoury outwards. This I repeated twice, when I found I had considerably enlarged the opening; I then turned the point of the instrument upwards, and divided the outside, and could then with ease introduce my hand. There was little hemorrhage. I stopped until it was subdued, and in the mean time gave half an ounce of ergot of rye, in a bottle of gruel. This soon produced the desired effect. I then easily dilated the passage, and had very little trouble in producing a fine calf alive. I removed the placenta in about fifteen minutes, afterwards administered some gruel, ordered one pound of sulphate of magnesia to be given four hours after, and left her. In two days afterwards the cow got up, and was quite well in ten days. She produced a calf the next year without assistance."

Various other cases of a similar kind are on record.—ED.

#### *Inversion of the Vagina and Womb.*

Inversion of the uterus as well as the vagina sometimes attends parturition, the former usually following, and the latter preceding the process. A case of inversion of the va-



gina occurred in my practice a short time since, and as it is not uncommon, may be taken as a sample of others. I was requested to attend a fine young cow, belonging to Charles Wheeler, Esq., M. D., near this town. The animal I found had been purchased in Jersey, a few days previously, and was expected to calve for the first time in about a fortnight. Being rather late for the packet, she was driven with great haste to the shore, and up to her belly in water, before she could be shipped. She had a rough passage through the night to Southampton, and in the evening she appeared uneasy, and the next morning and during that day the attendants expected her to calve. On the following morning I attended, and found her in the following state. The vagina was inverted, and protruded from the vulva; the cow was continually discharging her dung in a very relaxed state, and she appeared very uneasy, feverish, and off her feed. After getting the parts properly cleaned, I returned with some difficulty the vagina (in doing which I found no part of the calf had escaped the womb), and placed within the bearing a large sponge, and cutting a roller towel lengthwise, applied it as a bandage to the parts, making it pass in front of the chest, and supporting it by pieces of tape over the back. An ounce of spirit of nitrous ether with a dram of powdered opium, was then administered in a draught, and half the quantity of opium exhibited in the evening, and twice the following day. The vagina afterwards protruded twice when the cow discharged her urine, but being unaccompanied by any spasmodic efforts, was easily returned by the attendants. The case did well, and in the course of ten days the symptoms of true labour came on, and a fine calf was produced without any untoward appearances. The above case, which is not unfrequently met with, shows how necessary it is to distinguish between the symptoms of

false and true labour, and how desirable it is to abstain from very active measures in doubtful cases.

*Inversion of the uterus or womb* sometimes occurs after labour, and arises from the severe efforts of the womb in expelling its contents. It should be returned as soon as possible, and the other measures before recommended should be put in practice.—Ed.]

## CHAPTER XIV.

## THE DROP, PUERPERAL FEVER, OR MILK FEVER.\*

MANY cows die of this disorder, which is produced either from being too fat at the time of calving, from having been

\* There is no disease affecting cattle which has been involved in so much apparent mystery as this, and none which has elicited such various and contradictory opinions. Its very name is calculated to mislead, and to induce the supposition that it is the same as the puerperal fever of women after child-birth; whereas, in point of fact, it is a peculiar disease, affecting cows alone. Considerable attention has, however, of late been bestowed on it by veterinary surgeons; and, if we have not yet derived that insight into its nature and causes that we could wish, we have yet very greatly improved and extended our knowledge and acquaintance with the matter. It used to be supposed that the uterus or womb was the principal seat of the disease, but it has now been ascertained that this organ is not affected in one case out of ten. To Mr. Friend of Warsal we are principally indebted for directing our attention to the brain and nervous system, and it has since been placed beyond doubt by the researches of other practitioners, that these organs are the principal seats of the disease. There are, however, two varieties; one exceedingly dangerous, the other comparatively attended with little danger; and this accounts for the different opinions we have given as to the fatality of the disease. In the severer description, the brain as well as the spine is involved; in the milder form, the lesions appear confined to the region of the loins. Cows rarely become affected with this disease until they have had several calves, and the short-horn breed is more liable to it than others.

"The first symptom," observes Mr. Simonds, "in the severer affection, is a staggering gait; the respiration soon becomes disturbed; the eyes appear prominent and glassy, and the pupils greatly dilated. After reeling about for awhile, the animal falls—often to rise no more. The head is turned to the side, and the animal becomes unconscious. Liquids, if given with the horn, frequently enter the larynx, without producing coughing or irritability; the nerves of sensation appear to have lost their power; the animal often loses the power of motion in



fed improperly, from the calf having been disturbed in the womb, and having thereby its position changed, or from

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the fore extremities as well as the hind; and sensation, too, is sometimes lost, with or without the power of motion." Sometimes the animal lies in a comatose state, at others, exhibits great pain and distress. The disease sometimes destroys life in a few hours, and if the animal dies, it is generally within forty-eight hours from the commencement of the attack. The pulse is generally much quickened, being from 70 to 80 in a minute, but soon becomes very weak. The appetite is of course totally lost; rumination suspended; and there is generally fatal constipation. It must be confessed the majority of cases of this severe affection prove fatal; and on examining the body after death, the principal disease is found to exist in the brain and spinal chord; the latter in the greatest degree at the region of the loins. The chord itself is often discoloured, and the vessels of the membrane immediately covering it injected with blood, and sometimes these vessels are ruptured. The brain often presents a similar appearance, though in a less marked degree. The third stomach is nearly always found full of hard and indigestible food; and sometimes the other viscera present appearances of inflammation. The uterus is generally found in the same state as it usually is a few days after parturition, but occasionally it is discovered in a state of the most intense inflammation. In these cases, inflammation of the uterus and vagina appears added to the other disease. When such is the case, there is usually greater pain exhibited, and the inspection of the organs of generation shows great inflammation. The symptoms of the milder form of this disease are much less severe; the animal drops and is unable to rise, but continues feeding, and possesses consciousness and sensibility. The disease is a local affection, affecting the spinal chord, but confined to the loins. The bowels are costive, and the bladder often loses the power of discharging its contents. If the case goes on favourably, the animal rises of her own accord in the course of three days or a week. In both affections, the digestive organs altogether are greatly deranged, and, as Mr. Simonds well expresses it, the food, no longer obeying the laws of vitality, is acted on by those of chemistry; fermentation often takes place, and the animal is frequently hoven.

With respect to the cause of this disease, and why it should be confined to the cow, a satisfactory solution has not been afforded. It appears, however, to be the fact, that cows in good condition are more susceptible of the disease than those in a poorer state; and it more commonly appears after the animal has had four or five calves. Mr. J.

the force and violence employed in delivery. Difficult calving is so frequent in cows, that cattle doctors who have

Hawthorn advises, with a view of preventing the disease, to lower the diet for several days before and after calving, and that the milk should be drawn at the same time.

*Treatment.*—In treating this disease, it is very important to ascertain whether it belongs to the severe or the mild variety, as on this the activity of the treatment must in some measure depend. It will also assist our prognosis to ascertain whether the secretion of milk continues or not, as it has been found that in the former case the cow usually recovers, and in the latter generally dies. If the animal feels cold, it will be desirable to exhibit some diffusible stimulant in the first instance; such as an ounce of nitrous ether. Bleeding must depend on the state of the pulse; if full and bounding, we should abstract sufficient blood to render it softer and weaker; if, however, the pulse is weak, we should abstain from bleeding. It is sometimes necessary to repeat the bloodletting, but rarely desirable to abstract a large quantity. It is of vast importance to produce purgation; on this, indeed, the recovery will greatly depend: but it is surprising what vast quantities of medicine are often exhibited in this complaint before this effect can be obtained. The following is a good formula:—

Sulphate of magnesia, or soda	-	-	-	1 lb.
Flowers of sulphur	-	-	-	2 oz.
Ginger powder	-	-	-	$\frac{1}{2}$ oz.
Spirit of nitrous ether	-	-	-	1 oz.

To be dissolved in warm water.

To this, in very severe cases, may be added 10 or 15 drops of croton oil. One third or half the above, with the exception of the croton, may be afterwards administered every six hours until a proper effect is obtained. The strength and repetition of this purgative must be regulated by the severity of the affection. The draught should be given slowly and carefully; and, when the severer affection is present, it would be desirable to administer it by means of Read's syringe and tube, letting the latter reach half way down the œsophagus, otherwise there is great danger of the medicine entering the windpipe, and thus producing, as it has in numbers of instances, dangerous and fatal inflammation. The next point is to apply an active stimulant, such as tincture of cantharides, with hartshorn and oil, to the whole course of the spine, which should be repeated more than once. The purgative should be assisted by the administration of frequent injections, and the



acquired a successful method of assisting them, or in drawing the calf, as it is termed, are considered very useful persons in a dairy district. Too often, however, they do considerable mischief by the force they employ, and especially if the cow is fat, or in good order. Not only inflammation of the womb is thus produced, but such exhaustion of the vital power, that the fever which follows quickly proves fatal. The remedies to be employed are bleeding, a mild laxative, and a clyster. Cordials and anodynes are sometimes employed, such as ale, with a little toast in it, or some preparation of opium. There may be cases where the cow after calving appears languid and weak, and where such medicines are useful, by giving temporary energy to the system, and thereby hastening the expulsion of the after-birth; but whenever there is much fever, which is indicated by the quickness of the pulse, difficult breathing, pain, and want of appetite, cordials would be improper. Puerperal, or milk fever, is seldom cured, but may always, or almost always, be prevented, by keeping cows as much as can be in the field, and when it becomes necessary to give hay, to give such only as is of the best quality. It is advisable also to keep them in a situation where they can have shelter in wet and cold weather. Tying them up, and keeping them on bad hay, is certainly the source of the evil; but it should also be known, that exposure to the wet and cold of winter greatly

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bladder evacuated by means of the catheter. When purgation is established, vegetable tonics, such as gentian and ginger, two drachms of each, may then be given.

For a further account of this disease, I beg to refer to the pages of the *Veterinarian*, and particularly to that portion devoted to the records of the Veterinary Association, before the members of which body the subject has been introduced, and by them fully and satisfactorily discussed.—ED.



depresses the vital power, and thereby diminishes the energy of the digestive system, rendering it less capable than it would otherwise be, of digesting the bad hay, or straw, that is often, or generally, given them in winter. Mr. Sumner cured five out of six by bleeding freely, giving opening medicine and clysters, and covering the loins with sheep's skin.

## CHAPTER XV.

## DISEASES OF THE UDDER.\*

*Loss of the Milk, Garget, &c.*

HAVING in the beginning of the book described the structure and economy of the digestive system, the reader will

\* The udder of the cow is very liable to inflammation after calving, in which case it becomes greatly enlarged, feels hard and knotty, from the milk coagulating and ceasing to flow from some of the teats, and sometimes blood appears with the milk. When it thus becomes hard and enlarged, the disease is termed the *garget*. It may be produced by exposure to cold and wet, by not being milked clean, or by being in too high condition. The calf should be allowed to suck, which alone will sometimes disperse the swelling, and if it does not, the udder should be well fomented with warm water several times a day. If the inflammation is considerable, the cow may be bled and physicked, and the following ointment is recommended by Mr. Youatt to be well rubbed in after each milking:—

Powdered camphor	-	-	1 oz.
Mercurial ointment	-	-	1 oz.
Elder ointment	-	-	$\frac{1}{2}$ lb.

To be well incorporated together.

Warm fomentations should also be employed. If the swelling does not yield to this treatment, or has been of long continuance, and feels very hard, the following ointment may be rubbed in daily, taking care, however, that it is not carried to such an extent as to reduce the natural size of the udder as well as the swelling,

Iodide of potassium	-	-	1 part.
Lard	-	-	7 parts.

In obstinate or long continued cases, the iodide of potassium may also be given internally, in doses from six grains to ten. Whilst this treatment is pursued, the milk should be carefully drawn away by the hand. If matter forms in any part of the udder, it should be immediately

not be at a loss to account for the cow losing her milk, yielding bad milk, or for that disease of the udder, or

lanced and the pus evacuated, and if the ulcers appear unhealthy, they should be dressed with a solution of chloride of lime. No probes of any sort should be put up the teat, and if much pain is evinced in the act, milking should be avoided. Mr. Greswell, in an essay on the subject read to the Veterinary Medical Association, recommends in bad cases setons to be inserted in the neighbourhood, and two or three drachms of extract of belladonna given daily when the pulse is high.

If the udder appear gangrenous, it should be scarified deeply, and a solution of chloride of lime or of nitre applied, and tonics and stimulants given internally. When the cow dies it is generally from gangrene; to prevent which, it is sometimes necessary to cut out either the whole or part of the glands; but this should not be done, unless the animal has strength enough to bear the operation.

*Weeds.*—There is another inflammatory disease of the udder, which differs from that just described, and is accompanied by a constitutional derangement and general fever. In Scotland it is termed weeds, but in England it has no specific designation. It is thus described in the ninth volume of the *Veterinarian* by Mr. Pottie:—

“The cow takes a shivering fit, which may last from two to twelve hours. This is succeeded by a hot fit. The temperature of the body rises sometimes slowly, at other times quickly; the cow hangs her head and refuses food; her eye is red, pulse quick, breathing a little hurried, and the back is arched. The cow, in short, is fevered. Before the hot fit is established, or very soon afterwards, the secretion of milk ceases, and a portion of the udder is hot, painful, and swollen. Subsequently an abscess forms in the udder, or one or two quarters become cold, black, and insensible. A large portion is dead; upon cutting into it no blood escapes, and no pain is expressed. The intensity of the fever, and the disorganisation of the udder, almost invariably bear a certain relation to the duration of the cold fit. The longer the cow shivers the more serious are the ultimate consequences.

“When I first commenced practice, I tried bleeding, purging, and the other auxiliary remedies against inflammation, and I dare say I frequently mitigated the violence of the disease; but I soon found that these measures would not arrest it. They would not prevent disorganisation of the udder. Now if the case is obtained in the beginning, while the patient still shivers, a single drench is all she requires. In a quart of hot water, or hot milk, give one ounce of the seeds of the carraway, and as much powdered ginger. Clothe the body and give little food. The cow in general will be well the next day. But if there



rather of one of the quarters of the udder, which is commonly named *udder-ill*, when the digestive system, and especially the fourth stomach, is by any means disordered. This may happen not only from improper feeding, but also from a chill; that is, being exposed to cold and wet,

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be any dulness or constipation, let a purgative combined with an aromatic be given, and as much cold water as the cow will take. But let her not stand exposed to any current, especially after drinking. Chilled water is safer, but cows will seldom take enough; and rather than this should occur when purgation must be established, it is better to give the water cold, and drive them about for a little after drinking.

"If the cow has been shivering several hours, and the udder has become affected, still the stimulant may be given. If pernicious at all it is only after the fever is developed. After a while it may be prudent to bleed, and it is good to give a purgative along with the stimulant. But if the udder has become affected, however slightly, these means will have little efficacy without much attention to the diseased organ. It must be fomented in earnest. Fomentation, as usually applied in cases of this kind, is a mere mockery. In the first place, the water ought to be so hot that the hand cannot remain, though it may be dipped in it. A large bucketful of this should be placed under the udder, and its temperature maintained by frequent supplies. Then it must be applied for an hour at a time, three or four times in the course of the day or night. A blanket or large woollen rag, and two persons to hold it, are requisite. Place one on each side of the cow, each having hold of the cloth, folded into a convenient breadth; dip the middle portion into the water, and let it be tightly and closely applied to the udder, so as to suspend as well as foment it. It need not be lowered oftener than once in eight or ten minutes. At the end of an hour the udder and adjacent parts should be quickly dried with cloths. The tumefied portion of the udder should be rubbed with ammoniacal liniment, or with strong spirits. I sometimes use whiskey. Until the next fomentation, the rug or blanket is to be tied over the udder or loins, so as to suspend the udder. The wet warm cloth is to be covered by another, to prevent evaporation. The mild stimulant may be applied after every fomentation, and the repetition of this process must be proportioned to the intensity of the inflammation. When the animal is tractable, one person may apply the fomentation by tying the blanket over the loins and injecting the water under it. Poultices are not often useful. To do good they must be large and moist; their weight is not compatible with complete suspension of the udder."—ED.

or drinking freely of cold water when heated by exercise. It may happen from the animal lying down in cold grass at the latter end of the year, when the nights are cold and foggy, and at a time when the stomach is loaded with food, and the bloodvessels with blood, and when in consequence the brain is loaded, and the animal inclined to sleep. If the cow is in good condition, and especially if she breathes quickly and appears stupid, it will be proper to bleed; then the drench No. 1., for *red water*, is the best remedy, and afterwards short and sweet grass, where the animal may have sufficient exercise in getting her food. This will gradually strengthen the stomach, improve digestion and chyfication, and purify the blood. The swollen udder, or rather that quarter of the udder which is affected (for there is seldom more than one affected at a time), should have the bad milk drawn from it three or four times a day, for by remaining in the quarter it would irritate and increase the inflammation. The application necessary for the swollen udder is neats'-foot oil, or olive oil, and when it is considerable, fomentation may also be made use of. If the swelling continues, and is not very tender, some of the following embrocation may be tried.

*Embrocation.*

Olive oil	-	-	-	3 ozs.
Oil of turpentine	-	-	-	1 oz.
Camphor	-	-	-	2 drs. — Mix.

When the udder-ill is neglected, and especially when the bad milk is not drawn off, and improper medicine is given, pus, or matter, forms in the quarter, which, after some time, bursts. In this case, the wound sometimes gradually heals; at others, a fungus, or excrescence, sprouts from it, which is often of considerable size. This excrescence,



however, if left to itself, gradually drops off, and remaining some time gradually heals. Sometimes the matter in the udder gradually drains off from, or accumulates in, the teat, which requires to be opened with a lancet. Another termination of this disorder is a gradual thickening, or hardening of the quarter, which ends in its total obliteration, and the recovery of the animal's health.

The most simple treatment is the best in this case. The cow should be kept at grass; and if there appears to be any disorder of the stomachs, the opening drench, No. I., for *red water*, should be given. The udder may be kept clean, and that is all that is necessary, except a little oil, to keep off flies; and giving vent to the matter, by a lancet, from the udder, or rather the teat, when it clearly appears to be necessary. The opening should be made towards the lower part, where the matter appears to point, as it will then flow off freely.

#### *Cow Pox.*

[There are two forms of this disease, which may be termed the true and the false; each of them is infectious, and capable of communicating the disease to the human hand in the act of milking. They both consist in the formation of little vesicles, which contain purulent matter. In the true pox the vesicles are larger, rounder, and have a little depression in the centre. The contents of these bladders are at first thin, but gradually assume more of the appearance of matter. In both affections, in the course of a few days a scab forms on these pustules, which peels off, leaving the part sound beneath. If the pustules are broken too soon there are ulcers left, which are often troublesome to heal, particularly in the true pox. The constitution is much more affected in this affection than in the other, and sometimes rumination is thereby suspended.]



The *treatment* of these affections is very simple; an aperient may be administered internally, and if the ulcers are exposed they should be washed with a little cooling lotion, or a weak solution of chloride of lime, which Mr. Youatt states will prevent the disease being communicated to the human hand. If the ulcers continue sore they may be covered with a little powdered chalk. It is of course well known that it is the matter of the cow pox with which infants are vaccinated, and which, in a great measure, secures them from the small pox. Dr. Jenner, who introduced this valuable discovery, supposed that the cow pox was originally produced in the cow by inoculation with the matter of grease in horses. This, however, has been proved to be erroneous.—ED.]

## CHAPTER XVI.

## RED WATER.

THIS is a disorder which often occurs, and not unfrequently proves fatal. After a careful examination, I am of opinion that it originates in weakness of the stomach, induced by feeding on bad hay during the winter. In cows that have died of this disorder we almost always find an accumulation of the fibrous parts of hay in the third, or foliated, stomach, compressed into thin cakes, and matted together. The cuticular coat of the leaves of the stomach generally separates with those cakes of matted fibres, and the muscular coat is found weakened and distended.

From the universality of this appearance in cows that die of red water, there cannot be a doubt that the remote cause or origin of the red water is weakness of the stomachs or digestive system, and improper feeding during the winter.\* We find, however, some variety in the symptoms

\* Red water has of late engaged the attention of veterinary surgeons in a marked degree, and it is now generally considered that it is a disease of the digestive organs, principally of the liver; that the dark colour of the urine is owing to the presence of vitiated bile, and not to blood, as used to be supposed; that the kidneys are rarely affected, and then only after the disease has existed for some time. These views are supported both by an analysis of the urine, and an examination of the viscera in fatal cases.

The disease has, however, been confounded with another, in which actual blood has been discharged with the urine, and which has been owing either to rupture of some of the blood vessels (hæmaturia), or to inflammation of the kidneys. In these cases the blood has been readily detected in the urine in a coagulated state, and the loins are exceedingly

of this disorder. Sometimes the alteration of the urine is inconsiderable, and the disorder of the stomachs and bowels

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tender on being pressed, and the case is altogether different from that we are describing.

The *symptoms* of red water are at first purging, which is generally succeeded by costiveness; the appetite is impaired, the pulse and breathing quickened, and the former often weak, though bounding at the heart; the extremities cold, and the membranes of the eyelids and nostrils pale. The animal ceases to ruminate, and the milk is lessened. The urine, at first brown, after a while often becomes black, and the disease is called black water, which has been erroneously treated of as a different disease. Sometimes matter is discharged with the urine, which is a very unfavourable symptom.

The causes of this disease have been a matter of some dispute. It appears to be peculiar to particular soils, but though most prevalent in mossy land, is not confined either to the hill or the vale. Sudden changes from one soil to another may derange the digestive organs, and thus prove a fertile cause of this disease. Mr. Harrison, of Ormskirk, in an excellent paper on the subject in the *Veterinarian* for May, 1840, enumerates as causes of red water, "hot and long continued dry weather, or fine warm growing weather in spring, supervening on a severe cold and sterile winter; or a variety in food, as a change from low, mossy, marsh lands, where the herbage is rank and unwholesome, to high limestone land, where the produce is short, sweet, and stimulating; or a change from a poor to a luxuriant pasture, even in the same neighbourhood. The causes of red water are so well known among graziers in the West Riding of Yorkshire, that several with whom I am acquainted, taught by experience invariably and too fatally for them, look for, and have innumerable cases during long drought, or prior to or immediately after their cessation.

"Red water being so prevalent in hot and dry weather, may be accounted for by the fact of the liver being employed in removing from the system the superfluous carbon. This has caused it to be considered in some measure subsidiary to the lungs, in which we know the same process takes place, the air which enters them returning loaded with carbonic acid.

"Many circumstances tend to strengthen this idea. The heat of the body depends on the formation of the carbonic acid; but if the external heat is sufficient, there is less necessity for internal heat; less carbonic acid is formed; more carbon is left to be got rid of by the liver; the bile becomes acrid, and the liver deranged. The fact of cattle being



is the predominant symptom, and one which requires attention. At others, the urine becomes brown and turbid,

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subject to red water prior to or immediately after a cessation of dry weather is not stated on my own authority alone, although my own practice and observation have confirmed it, but also on that of several graziers whom I know to be accurate observers, and who have stated that if drought had existed for some length of time without red water making its appearance amongst their herds, its breaking out was a certain precursor of, and soon followed by a change. It is also a well authenticated fact, that the cattle which they are in the annual practice of purchasing in the spring and early part of summer at the different fairs on the western coast of Lancashire, when the land is of a peaty and marshy nature, are sure to be affected with red water, almost immediately after their arrival at their destination ; while on the other hand, if, at the same time, others are brought from the immediate neighbourhood, or from land similar to their own, and which have been bred and reared there, these cattle are, generally speaking, rarely affected by the change. I have known instances without number, in which cattle have been bred or long kept upon the mosses, of which there is no lack in this country, becoming affected with this disease soon after their removal to a more elevated situation, although the distance has been inconsiderable, in many instances not exceeding half a dozen miles, and in some where the distance has been still less ; whilst the instances of cattle being affected on a removal from those situations to the mosses are very rare indeed. I would not, however, infer from this that the cattle which are kept upon, or have been bred or reared upon, or who from length of time have become, in a manner naturalised to these mossy districts, are exempt from the disease ; on the contrary, they are, like those located in other neighbourhoods, equally subject to its ravages, and from a similarity of causes."

Red water very frequently occurs in cows from two to three weeks after parturition. Mr. Simonds considers this is owing in great measure to the sudden alternation from a comfortable cow house, to the open field, and from warm gruel and mashes, to a poor and cold diet, to which the cow is frequently submitted a few days after calving.

The *treatment* of this disease principally consists in opening the stomachs and bowels. On this matter there is no dispute, and indeed when the bowels are freely acted on by the medicine the animal generally recovers. It is necessary, however, to combine some stimulant with the purgative, and the following combination will be found to answer every purpose :

and even approaching to blackness. Some land is remarkable for giving cows the red water; and from the circumstance, I believe, of the animal eating the grass of such land with greater appetite, and digesting it more quickly. This kind of pasture also gives such energy to the weakened stomachs, that the matted cakes that have accumulated

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Sulphate of magnesia	-	-	8 oz. to 1 lb.
Sulphur	-	-	2 to 6 oz.
Carbonate of ammonia	-	-	$\frac{1}{2}$ oz.
Ginger powdered	-	-	$\frac{1}{2}$ oz.

To be dissolved in a sufficient quantity of warm water.

One fourth of this medicine may be repeated every six hours until the bowels are sufficiently acted on.

Mr. Simonds of Twickenham, who has seen much of this disease, is in the habit of bleeding very moderately at the commencement of the disease, taking care to close the orifice the moment the action of the pulse is affected by it. Mr. Simonds's practice is supported by others, though the generality of practitioners abstain from bloodletting. It is an operation that if carefully and moderately practised at the commencement is productive of benefit, but pushed too far it is highly injurious, and often fatal. Mr. Harrison, whom we have before quoted, bleeds moderately in this disease, and gives a purgative similar to that recommended; and when purgation is established, mild stimulants and cordials. He also adds that he has seen a scruple of calomel given in a pint of yeast produce purgation, when other remedies have failed, and saved life in an apparently hopeless case.

The purgative should be assisted by frequent injections.

When the bowels are opened, mild stimulants and diuretics may be used.

Ginger and gentian, of each	-	-	1 drachm.
Spirit of nitrous ether	-	-	1 oz.

May be given in gruel twice a day.

The recovery of the animal is denoted by the gradual restoration of the pulse and respiration to the natural standard, and the return of the appetite; but sometimes with this amendment of the symptoms, the urine continues high coloured, and indeed becomes black. In these cases, Mr. Simonds advises a diuretic, and a strong stimulant on the loins. After recovery, the animal requires to be fed with caution and moderation, remembering that the digestive organs have all been greatly impaired.—ED.

between the leaves of the third stomach are forced off; and, for the promotion of this object, there is such thirst in the animal that she drinks as much water as is necessary for the purpose. From this circumstance red water is sometimes accompanied with a looseness of the bowels, the excrement being often discharged with considerable force, but in a small stream, and nearly as thin as water, often mixed with hard knobs, consisting of the accumulated matter from the third stomach: sometimes they are of such size as to plug up the fundament, and prevent the free discharge of excrement; in which case it is necessary to throw up a clyster, or remove the clots with the finger. As soon as this is done the fluid excrement passes off freely, unless stopped by other clots. There is another kind of red water, produced by blows on the loins, or by other cattle ramping upon them; and this is not accompanied by the looseness above described, or falling off of the appetite, which in the other red water is diminished, or even lost. This is generally named strain water, or red water from blows or bruises, whereas that which forms the subject of the present chapter has been named red water from indigestion. But when the bleeding from the kidneys is the principal symptom, and the stomachs and bowels are not materially affected, it has been named the inflammatory red water. This distinction must always be kept in view, and carefully attended to, as the two kinds of red water require a different treatment. The red water from indigestion is commonly met with in cows that have weakly constitutions, or such as have been good milkers, or that have had many calves; but the inflammatory red water most commonly happens to young steers and working oxen, when first put in for fattening. The disorder most frequently happens in the spring of the year, but sometimes it occurs in the summer. The first thing to be done is to



clear the first stomach from hardened matter or excrement that is lodged in it; for which purpose one of the following drenches may be given:—

*Drench for Red Water.*—No. 1.

Barbadoes aloes	-	-	-	4 to 6 drachms.
Common salt	-	-	-	4 to 6 ounces.
Ginger	-	-	-	1 to 3 drachms.
Water	-	-	-	1 quart.
Anodyne carminative tincture *				2 oz.—Mix.

And if this tincture is not at hand, half an ounce, or one table-spoonful, of tincture of opium or laudanum may be substituted for it.

One of these drenches is generally sufficient, provided the animal is drenched with two or three quarts of whey three or four times a day; and, if the weather is favourable, she should be kept in a field where there is but little grass. If the cow or steer is hot and feverish, that is, if the horns are hot, the nose dry and hot, the breathing quick and disturbed, a sufficient quantity of blood should be taken off to remove those symptoms. Sometimes a considerable quantity of blood must be taken off, even until the animal is faint, and then the drench No. 2., which does not contain opium, is most proper. The drench No. 1. is intended for cows whose digestive system has been much weakened; for in such cases there is so much debility in the stomachs that salt and aloes may do harm, unless some energy were given to the stomachs by the cordial property of ginger

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*\* Anodyne Carminative Tincture.*

Opium, cloves, and ginger, of each	-	-	-	1 oz.
Brandy	-	-	-	1 qt.
Mix, and frequently shake; and in a few weeks strain for use.				

and tincture of opium, or, what is much better, the anodyne carminative tincture.

It should be recollected, that if we succeed in removing the hardened excrement from the third stomach, and in changing the colour of the urine, or, as it is commonly termed, in *turning the water*, the digestive system or stomachs will remain in a weakened state, and therefore some attention will be required with respect to the animal's diet. The best situation is a field where the grass is short and sweet, and where she may have sufficient exercise in obtaining a proper quantity of food. The same situation is most fit for a beast that has had the inflammatory red water, for here both the digestive system and the kidneys will be gradually restored to health.

*Drench for Red Water. — No. 2.*

Epsom salt	-	-	-	from 6 to 8 ounces.
Water	-	-	-	1 pint, or more.
Castor or olive oil	-	-	-	6 to 8 ounces.—Mix.

If aloes and ginger are not at hand, and cannot be obtained in time for the red water from indigestion, that is, for the red water in cows with weakened stomachs, that have had several calves, and have been good milkers, the common salt should be given in a little larger dose; and if no laudanum, or anodyne carminative tincture, can be procured, a wine-glassful of brandy or gin may be substituted, and one table-spoonful of flour of mustard.

It is a circumstance much to be regretted, that the use of bad hay for cows is so general in many parts of England, that we seldom meet with dairies where the cows are not more or less injured by the winter's feeding. Inattention with respect to breeding, and change of climate, or putting the animal into an unsuitable climate, are circumstances



that contribute to the production of diseases among cattle. By reflecting on this we shall be led to the prevention of such diseases, which, on all occasions, will be found much easier than curing them.

I was informed by the late Dr. Jenner, among other circumstances relative to cattle which he condescended to communicate to me, that he had many times examined cattle that died of red water, and that he had always found a high degree of inflammation of the heart. I have lately received a valuable communication from Mr. Richard Sumner, an experienced farrier, who lives at Little Gomershale, near Leeds, Yorkshire. "As to red water I cannot say much more concerning the situation in which it most frequently occurs, than I did in my letter of July, 1821; only that I once saw six cows lying dead of red water at the same time. The farmer had fourteen affected with red water at the same time, and six of them died. It was brought on by drinking turf or peat pit water. About Proud Preston there were more cows ill of red water, at a place called Leland Mosside, than round the country for nine or ten miles: it was brought on by drinking peat pit water, though it was high lying land for five or six miles round the water. I am now satisfied of the truth of the late Dr. Jenner's observation relative to red water; that is, of its being of an inflammatory nature. Some time since I was sent for to see thirteen cows ill of red water, all on one farm. One of them died soon after I got there. There happened to be a surgeon and a butcher very near, so that we opened her immediately. The heart and liver were very much inflamed, and the dung in the third stomach was almost as dry as a stick. The kidneys were enlarged and tender, the bladder full of a coffee-coloured fluid. I asked the cow-doctor what he had given? he replied 'a little binding medicine to bind



the bleeding vessels up.' I proposed bleeding, and was allowed to bleed only three of them, and give an opening drench. The others were not bled, but had the same drench given to them. I saw them the next day; those which I had bled were quite well; the others were in the same state as they were the day before. I was now allowed to bleed all of them, after which I gave only one half of the opening drench. The following day they were all well. I have not lost one in the red water since."

When several animals are attacked with a disease on the same farm, the first that dies should be opened and carefully examined by a veterinary surgeon or a surgeon; this would seldom fail of pointing out a successful mode of treatment.

## CHAPTER XVII.

MOOR-ILL\*, WOOD-EVIL, CLUE-BOND, FARDELL-BOUND,  
PANTAS, &c.

THESE disorders all belong to the same family, that is, weakness of the stomachs, or digestive system, brought on

\* This disease seems peculiar to moors and commons on which wood abounds. It does not appear to depend either on the poverty or the richness of the pasture, but on some peculiarity of the productions either of the food or water, or both. "It occurs," says Mr. Surginson (*Vet.* vol. ix.), "in all seasons, but is most prevalent in the summer, and especially when the season is dry."

*Symptoms.*—The first appearance of wood-evil is a staring of the coat, and a seeming adherence of the whole of the external integument to the ribs below, so much so, that it can scarcely be raised by the fingers; the belly is also tucked up, and the animal is gradually and daily losing flesh; the bowels are confined from the earliest appearance of the disease to its termination, and sometimes very obstinately so; constipation is a regular attendant of wood-evil, let it occur when it will. The appetite is at best capricious; the animal will pick up stones, pieces of iron, bone, &c., and will grind them in her mouth for several hours successively; she will also readily seize and greedily devour all the linen she can possibly get at; and likewise very eagerly swallow all the oldest and filthiest urine in her way, and this she prefers to the purest water. These symptoms are succeeded by a stiffness in one or more parts of the body, but usually in the fore extremities, the shoulders, or the chest, and this often shifting from limb to limb. Sometimes intense lameness will ensue, and this likewise shifting from joint to joint. When the patient is induced to move, she utters a kind of interrupted moan or groan, expressive of the agony she feels. There is also a singular cracking noise to be heard when she walks, as if the ends of the bones of every joint were removing out of and returning into their sockets at each step she takes. The secretion of milk is now lessened, and the animal refuses to eat her usual quantity of food. The disease, if not arrested in its progress, assumes a different form. The animal begins to heave at the flanks, and that sometimes violently,

by feeding on unwholesome food during the winter, and accelerated or heightened by keeping the animals in a cold wet situation. In the low open country about Glastonbury, where bad hay is very plentiful, but ought to be good, these disorders are prevalent, and are known by a variety of names, among which is moor-ill, or evil, because the country was formerly a moor or common, and very wet and exposed.

The drink No. 1. for *red water*, and a sheltered situation, are the best remedies: a few drenches of beer with ginger

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and the pulse is accelerated occasionally to more than 100 beats in a minute; the bowels, which all along have been confined, are still more so now; the secretion of milk almost ceases; the animal seldom ruminates, and can scarcely be induced to eat any thing.

*Treatment.*—"The first thing to be done," observes Mr. T. W. Mayer, Junior (in the same number of the *Veterinarian*), "in the plan of treatment is to regulate the bowels; for this purpose, a good smart dose of aloes in solution is the best, which, if it does not produce its effect, must be followed up by salts, repeated every six hours till they operate. It is not a good practice to bleed unless there are symptoms of inflammation of the lungs, in which case it is proper, and will relieve the animal much; but it requires to be done with caution. It will be proper to follow up the aperient with febrifuge and alterative medicine until the organs of digestion are restored to their proper tone. The diet should consist of mashes and gruel." Mr. Surginsson advises, in addition to this plan of treatment, a seton to be inserted in the dewlap; and, in a very severe case of some standing which he details, he found it necessary to abstract ten pounds of blood, and administer 6 drachms of aloes, 12 ounces of sulphur, and 16 drops of croton oil, with 3 drachms of powdered carraways; and the second day he took eight pounds of blood, and repeated the purgative in a smaller dose, and blistered the sides. On the third day, the medicine had operated, but the blister not having acted sufficiently, was repeated, and one drachm of digitalis and tartarized antimony, and three of nitre, with a drachm and a half of aloes, was administered. After this the cow improved gradually and got well. This appears to have been a particularly severe case, and complicated with inflammation of the lungs, and shows how necessary strong purgatives are in cattle (unlike the horse) although the chest may be affected.—ED.



may afterwards be required, and then the animal should be kept in a sheltered field, where the grass is rather short but sweet. It is easy, however, to prevent these disorders, by making hay earlier than is now done; for there would then be better hay, and better after-grass. Farmers should also select the hardiest kind of stock for such situations, or breed their own, which is much better, because they would then be inured to the climate. I have been informed that the following drench has been given with success in moor-ill. Take one gallon of ale and boil in it a handful of wormwood until it is reduced to one quart; add to this six drams of long pepper, powdered, and six drams of grains of paradise. The whole to be given at one dose.

## CHAPTER XVIII.

## RHEUMATISM, CHINE FELON, JOINT FELON, ETC.\*

THESE are diseases of the back or joints, attended with weakness and loss of flesh, brought on by feeding on bad hay or straw, and by the cold winds and the wet in the early part of spring. Let the beast be removed to a better situation; a sheltered field is the best; and if there is not

\* Cattle are particularly liable to rheumatic affections from the careless manner in which they are exposed to the severity and vicissitudes of the weather; and this, in cows, often soon after calving, when the system is much more likely to become affected. Rheumatism may be either general or partial, acute or sub-acute. We sometimes find a general stiffness of all the muscles, accompanied by considerable fever, and sometimes involving the internal viscera, particularly the membrane surrounding the heart and lining the cavity of the chest. More frequently the attack is less severe; inflammatory swellings may take place at particular places, flying about from part to part, and attacking more particularly the joints, and sometimes the tendons. If not subdued, the synovial fluid greatly increases, and distends the cavity of the joints, and sometimes an abscess forms in them, and amongst the tendons and muscles, and, after wearing down the constitution, at length becomes fatal. Sometimes this form succeeds an acute attack, or violent chill, as it is called, which may appear to get better, whilst it only becomes chronic. The disease in this state is commonly termed joint felon, and is generally considered incurable.

The *Treatment* of rheumatic inflammation consists in bleeding freely in the early stages, opening the bowels, and applying at first warm fomentations, and afterwards stimulating liniments to the affected parts. The animal should be housed and kept in a comfortable state. When the bowels are opened, two drachms of nitre, one of tartarized antimony, and an ounce of spirit of nitrous ether, may be given at first twice, and afterwards once a day. Setons of black hellebore root may also be inserted in the dewlap and the thighs, according to the parts affected. — Ed.

sufficient grass, let there be bran mashes with a little malt, and a moderate quantity of good hay. The swollen joints should be well rubbed with neat's-foot oil, or the following embrocation; and the best drench that can be given is No. 1. prescribed for *red water*. Should it appear necessary after this to give any thing more, let half a pint of good beer with a little ginger be given morning and evening.

*Embrocation.*

Sweet oil	-	-	- 4 oz.
Oil of turpentine	-	-	- 2 oz.—Mix.



## CHAPTER XIX.

QUARTER-ILL, OR EVIL, BLACK QUARTER, BLOOD  
STRIKING, ETC.\*

THIS disorder attacks cattle when they are about one year old, but sometimes rather later. It is a dangerous and

\* This disease is designated by Mr. Youatt "Inflammatory Fever," being, indeed, an inflammatory attack of the whole system, though generally affecting in a marked degree some particular limb. It attacks cattle in good condition, and young animals more than older ones, and often prevails to a great extent on particular soils. It generally appears in the spring or early summer, being that time of the year when there is not only most nourishment to be obtained, but also when there is a greater disposition in the constitution to form blood — a more plethoric state of the body.

The first *Symptoms* are usually sudden in their appearance, and are those of severe fever, being a quick, strong, and hard pulse, from 70 to 80 in number; hot mouth; the membrane of the eyelids red and inflamed; the breathing laboured and quick; rumination suspended, and appetite lost. Sometimes there is weakness of the loins and hind quarters from the first, and the animal soon lies down from inability to stand. In some cases, the disease is so rapid as to destroy the animal in the course of twenty-four hours, or less, but more frequently the general symptoms appear much improved; but there is severe lameness in one or both hind quarters; whence the name is derived by which the disease is usually designated. There is now considerable tenderness of the loins and back, and sometimes swellings of the parts, and the shoulders, which, on being pressed, makes a crackling noise as if the cellular membrane were inflated with gas. These peculiar swellings when they are present are particularly unfavourable, and are usually forerunners of a fatal termination. To this often succeeds ulcers in various parts, as the mouth, the abdomen, the teats, and the quarters. These ulcers rapidly increase and become offensive; the dung and urine fetid and bloody; and, in the course of another day or two, the animal dies in a putrid state, and the carcass will exhibit the appearance of a congested state of all the vessels, which appear distended

destructive disorder, and known in some parts of England by other names besides the above; such as black leg, black quarter, shoot of blood, &c. It depends upon repletion of the blood vessels, and is brought on by putting the young animal, when in low condition, too suddenly into good pasture, or even into such as is moderately good. The approach of the disease is observed by the animal separating himself from his companions, appearing listless, heavy, and refusing his food; but it often comes on so suddenly, that the owner has scarcely an opportunity of observing what are the first symptoms, sometimes finding him dead before he has an opportunity of doing any thing for his relief. The immediate symptoms of the disorder are lameness, and swelling of the hind quarters, and, sometimes, of the shoulders and fore parts. These swellings,

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almost to bursting, with black blood; and ulcers are often found within as well as outside the body.

The *Treatment* of this severe and dangerous disorder, which has often appeared as an epidemic and carried off vast numbers of cattle, consists, in the first instance, of extensive bloodletting. As much blood should be abstracted as the animal will well bear, until, indeed, the pulse becomes scarcely perceptible. This should be repeated in the course of six hours, if required, and warranted by the strength of the pulse. After the first bleeding, a purgative should be administered; a pound and a half of Epsom or Glauber's salts should be dissolved and carefully and slowly administered, and should be followed by half this quantity every six hours, until purging is effected. Sedative medicines should succeed purgatives; such as four drachms of nitre, and one each of tartarized antimony and digitalis. Setons of black hellebore may be inserted into the dewlap. If the treatment has been delayed, bleeding must be employed with greater moderation, being still regulated by the state of the pulse. If there are swellings of the joints, &c., they should be fomented with warm water; and, if ulcers appear, the solution of chloride of lime should be applied to them. Should much debility be present, plenty of gruel must be given, with vegetable tonics, such as gentian, ginger, and cascarilla bark, in doses of one to two drachms of each daily. — ED.



when pressed, make a crackling noise, from an effusion of air into the cellular membrane, occasioned by a putrid state of the blood. Like other putrid disorders, it is, at its commencement, of the most highly inflammatory kind, and can be cured only by immediate and copious bleeding, that is, until the animal faints. Nothing short of this can do any good. When the swellings have taken place to any extent, it is generally too late to do any good; bleeding is the only remedy that stands any chance of affording relief, and should, therefore, always be tried, at whatever time the disorder is first perceived. The quantity of blood drawn should never be attended to, but the effect it produces, and that is faintness. It is almost needless to add, that this is an important disorder, and carries off a great number of young cattle; as is a fact well-known from having been so often painfully experienced.

The nature of this disease was clearly shown in a beautiful young Durham heifer which belonged to Lady Hippisley. She had been grazing in the park at Stone Easton, with seven others of the same breed; and was found ill early in the morning. I saw her about 3 or 4 in the afternoon, when it was clearly too late to do any good. The farrier had bled her and given some medicine; but she was unable to stand, and appeared in great pain. She died in the course of the night, and I went next morning to examine the body. On my arrival I was informed that another had been found ill early in the morning, and that she had been taken to the dairy-yard, where the farrier had bled her and given her some medicine. I went immediately to see her, and found one of the hind quarters very much swollen and inflamed; it was very hot and tender, and the animal appeared in great pain. Pulse about 120. I desired the farrier to bleed her with his largest size fleam, which was done, and when she had lost about a gallon of



blood she fainted. We then left her to examine the dead heifer. The muscles of one of the hind quarters and of the loins were in many parts gorged with blood, apparently from a rupture of blood vessels, while in others they appeared quite pale, as if drained of their blood. But the most striking object was the heart, which was in the highest degree of inflammation. The lungs also were inflamed, or stuffed, if I may use the expression, with blood. From these appearances I expected to have found the brain in a similar state; but it was quite the reverse, scarcely a speck of blood could be seen. I now returned to the dairy-yard to examine the other. She appeared much relieved, but the affected limb or quarter had become cold and insensible. Next morning she died, though so far relieved by the bleeding that she had drank some gruel at night. On opening her it was found that the disease had not extended beyond the quarter first affected, and that the heart was only slightly inflamed. At the time these yearlings were attacked with quarter-ill the weather had been very wet, and the nights were extremely cold. If a young animal, whose stomach and blood-vessels are loaded, happen to lie down upon and sleep upon the cold, wet grass, there may be such a chilling impression made upon the skin as will cause the blood to recede from the surface of the body, and crowd about the heart and lungs. The first symptom in this case would be shivering and great depression of the nervous system. After a short time, however, the nervous system generally recovers from this torpor, and to restore the balance of the circulation the heart is excited to unusually strong contractions, by which the blood is propelled with great force from the centre towards the surface and the extremities, generally the quarters or loins. This is by no means an unfrequent occurrence in horses or in men; and though it may be called acute rheumatism, it is, in fact,

inflammation of the muscles of the affected parts, which sometimes extends to the heart, and terminates fatally. When the heart has been thus excited to violent action, there is no other way of tranquillising it than by a plentiful abstraction of blood. I have known the quarter-evil happen in winter, while the heifer was feeding on hay; that hay, however, was of the best quality, and she was liberally supplied with it. It is not unlikely, I think, that after heating herself by galloping about the fields, it being a fine sunny day, though very hard frosty weather, she drank freely of a stream of water which runs through the field, and thus produced the chilling effect above described.

My Yorkshire correspondent, Mr. Sumner, says, "With regard to quarter-ill, I have seen it occur both in high and low land, and particularly when drinking turf-pit water, and at the same time in good pasture. A little while since I was sent for to see a two-year old heifer that had the quarter evil in her thigh. I bled her freely, and gave her some opening medicine, punctured the swelling and blistered it freely. The drench was repeated; after an interval of 12 hours it operated well, and the heifer recovered. The last heifer I opened that died of quarter-evil, presented a somewhat different appearance from those before described. The heart, however, was found highly inflamed, but the lungs were healthy. The fourth stomach was highly inflamed, numerous blood vessels appeared through the cuticular coat of the first, second, and third; and upon scraping off this coat, which separated very easily, I found the muscular coat much inflamed. The spleen (milt) was enlarged, tender, and gorged with dark-coloured blood. The veins of the brain rather loaded, and the brain itself softer than in the healthy state." Young cattle are most subject to this disorder, especially yearlings, and from that period till they are two years old.

It may, however, occur after this, but with somewhat different symptoms. Spring and summer is the time when the disease makes its appearance, and it generally comes on suddenly. The young animal appears stupid and listless, hangs the head and ears, and has little or no appetite; a swelling takes place in some part of the body, as on the legs, shoulders, or on some part of the back. When these swellings are pressed, there is a crackling felt, as if air, with some fluid, were contained in them. The mouth and tongue are often blistered.

It requires but little reflection to be convinced that this disorder may, and always should be prevented, by not forcing young animals too much, but by keeping them in short or bare pasture. A common is the best situation for young growing animals. If they are kept in good pasture at that age, when the appetite and digestion are powerful, they should be carefully watched, and bled as soon as any of them appear dull and listless; but I am inclined to believe that if, when young animals are put into good pasture, they were limited in water, they would be secure from the quarter-evil, and probably many other diseases.



## CHAPTER XX.

## EPIDEMIC OR EPIZOOTIC\* DISEASES.

[VARIOUS epidemic diseases have appeared amongst cattle at different periods, and they have often been attended with great fatality. This fatality, however, has been greater on the continent than in this country, and more so in former times than at the present day. Virgil and other writers of antiquity describe several pestilential diseases which have raged to a great extent, and have been attended with great fatality. These diseases, however, appear to have been greatly owing to the absence of proper drainage, and the want of cleanliness. During the last century there have been several severe epidemics both in this country and others, and in France their fatality led to the establishment of the French Veterinary Schools. In this country the term murrain was given to the disease, and a copious history of it may be found in Mr. Youatt's work on cattle. During the present century epizootic diseases have neither been so numerous nor so fatal, but the one that has prevailed most extensively is that which has been raging during the last two years, and has not disappeared even at the present time.

*The late Epidemic.*

For two years past an epidemic, or rather epizootic disease, has been travelling throughout every corner of this

\* Epidemic signifies literally a disease raging amongst men : epizootic, one amongst cattle.

kingdom, not pursuing a steady undeviating course, but appearing and reappearing here and there, visiting every county and every parish, and not confining itself simply to cattle, but attacking likewise both sheep and swine. The ocean itself has not preserved the sister kingdom from its visitation, for there its ravages have been almost as extensive as in this country.

The disease hitherto is without a name, for although some have called it murrain, and others blaine or apethæ, and though in some respects it resembles both these diseases, yet in others it greatly differs from them; and thus it has not been generally recognised by any particular designation. This disease, although it has not been generally fatal or dangerous, has yet proved of serious consequence to the agriculturist, inasmuch it has greatly decreased the flesh in cows, and the supply and quality of the milk.

The severity of this disease has greatly varied at different times and in different places, sometimes being trivial, and lasting only a few days; at others dangerous, and sometimes fatal, and lasting a considerable period. In the former cases it has in many instances disappeared without any treatment, in the latter it has called for the exercise of the utmost skill and science in the application of remedial measures.

The *Symptoms* in many cases are ushered in by a cold fit, with a staring coat and cold extremities, which is soon followed by a reaction in which the extremities become warm, a discharge of saliva is observed from the mouth, and on examination the tongue is often found swollen; the beast appears tender in the feet, and feverish symptoms are manifested, the pulse being quickened and the muzzle feeling dry and hot. In the course of the first day vesicles or bladders are found on the tip and upper part of the tongue, as well as other parts of the mouth, the lips, and



between the hoofs and the heels, and in milch cows the teats are often similarly affected.

The animal now feeds slowly and with difficulty, sometimes from want of appetite, but oftener from the pain experienced in mastication. The vesicles become opaque, burst, and discharge a thin serum, the mouth becomes sorer than before, and the flow of saliva greater, and sometimes there are swellings along the back and loins, which being pressed appear to contain extravasated air. It is generally several days before the cuticle sloughs off.

In about four or five days amendment usually takes place; there is a greater disposition for food, and the animal generally soon gets well; and, though sadly pulled down by the disease, thrives rapidly afterwards.

Such is the usual routine of the symptoms, but sometimes they present a low typhoid form, and a putrid state is produced. In others, and particularly when there is a predisposition to become so affected, the disease becomes complicated with inflammation of the lungs, the liver, or the udder, or spasmodic affections of the bowels.

The *Causes* of the disease appear to be altogether obscure, and we must content ourselves with believing that it is produced by some peculiar deleterious principle in the atmosphere, which can neither be detected by our chemists, nor explained by our philosophers. However, there can be no doubt that, in very many instances, the disease is communicated by contagion.

The *nature* of this disease is that of a low fever. It is even at first decidedly constitutional, and the local appearances we have noticed are Nature's efforts to relieve herself, for in moderate cases the animals will go through the different stages, and get well without medical assistance. It has been proved to be decidedly contagious, and has



been communicated by giving a healthy animal a little hay, on which was the discharge from the bladders of the mouth of a diseased beast. The disease from its very nature has a great tendency to produce debility, and if the beast is bled largely, or improperly treated, it takes the form of typhus fever, under which the animal soon sinks.

The *general treatment* of the disease consists in moderating the fever, relaxing the bowels, applying astringents to the mouth and feet, and afterwards if necessary supporting the strength by tonics.

Some practitioners bleed, others abstain from bloodletting, and both methods have been successful. All agree, however, that if blood is taken it must be moderate in quantity. Unless local inflammation of some vital organ were threatened, I should not bleed. The bowels should be opened as soon as possible, for which purpose the following may be given : —

Sulphate of magnesia	-	-	$\frac{1}{2}$ lb.
Sulphur	-	-	2 oz.
Nitre	-	-	$\frac{1}{2}$ oz.
Ginger powdered	-	-	2 dr.

Dissolved in warm water.

One half the above, with an ounce of spirit of nitrous ether, may be repeated once or sometimes twice a day for several days. When the bowels are properly relaxed, the fever reduced, but the weakness great, the following tonic should be given : —

Ginger powdered	-	-	2 drs.
Gentian powdered	-	-	4 drs.
Sulphate of iron	-	-	2 drs.
Spirit of nitrous ether	-	-	1 oz.

Dissolved in warm water.

To the mouth may be applied several times a day the following liniment : —

Powdered alum	-	-	1 oz.
Sulphate of zinc	-	-	$\frac{1}{2}$ oz.
Warm water	-	-	1 pint.
Treacle	-	-	$\frac{1}{4}$ pint.
Mix.			

The feet should be carefully pared out, and if there is heat and tenderness, but no sore, a poultice of bran and linseed meal should be applied for a day or two. After which any detached horn should be cut off, and equal parts of muriate of antimony and tincture of myrrh applied to the sore. It will not be necessary to apply this caustic a second time, unless there should be fungus or proud flesh, but the following astringent powder will be found a very useful application to the sores, particularly to those on the inside of the heel that comes in contact with the other heel : —

Sulphate of copper finely powdered	-	$\frac{1}{2}$ oz.
Prepared chalk	-	2 oz.
Powdered alum	-	$\frac{1}{2}$ oz.
Armenian bole	-	1 oz.
Mix.		

In some cases the application of this powder at first will be sufficient without the caustic.

When the teats are affected, great care should be taken that the milk is not drawn with violence, and if the udder is inflamed it should be frequently fomented with warm water.

Any other appearances that may present themselves must be treated as the case requires. If there be symptoms of colic, an ounce of tincture of opium may be given with the

other medicine. If disease of the liver be denoted, a drachm of calomel may be added, and a blister applied to the right side. If the lungs be inflamed the animal should be bled, and the sides blistered.

Linseed tea or gruel may be offered to drink, and mashes, with the best and most nutritious food offered as diet. If the animal cannot drink, gruel may be given as a draught.

It is a matter of much importance to keep the beasts carefully clean and dry, but if the weather is fine and the pastures not very wet it will be as well to continue them at grass.

In sheep this disease has often appeared so slight as to get well without assistance, the only part locally affected being that between the hoofs at the heel. To this, it has been a very common custom to apply tar, which has answered the desired effect. In other instances its attack has been much more severe, whole flocks have been affected, and half of them have been found constantly lying down from inability to stand; in many cases the hoofs have been cast from the extensive suppuration within the foot, and the appearances have much resembled the foot rot. The cases are usually much more severe in wet than in dry weather. The feet are the parts principally attacked in sheep, the mouth being rarely diseased, and the constitution less affected than in the ox.

The *treatment* must be pretty similar to that employed for cattle, but the mouth of course will require no application unless diseased. The same medicine as those recommended for the feet in cattle, will be the best for sheep, and the powder will be found particularly useful; the detached horn must be carefully cut away previous to the application of the remedy. One sixth or one eighth part of the internal medicine recommended for cattle will be found



sufficient for sheep, according to their size. The folds or yards should be well littered, so as to preserve the feet from moisture.

Pigs may be treated in the same manner as sheep, but there is less danger of their losing flesh, as they are not required to travel in search of their food, and it being of a soft nature, may be taken, notwithstanding the soreness of the mouth.—Ed.]

## CHAPTER XXI.

## FOUL IN THE FOOT, LOO, OR LOW.

THIS disorder most commonly occurs to oxen, or bulls, when fattening, or to cows that are fattening, especially when they are fed otherwise than on grass. It consists in an inflammation, cracks, or soreness, and a discharge of stinking matter between the claws of the hoof, the matter bearing some resemblance to that which proceeds from the heels of horses, when labouring under the disease named grease.\* The common remedy for this is to rub some tar

\* Mr. Youatt considers this disease generally proceeds from an external injury. It usually appears in wet marshy land, and I believe is generally to be attributed to the combined operation of moisture and friction, by means of the mud and dirt between the claws. It is so far analogous to foot rot in sheep, and thrush and canker in the horse, although it has been clearly proved that the matter of foot rot in sheep, will not produce foul in the foot in the ox.

The following excellent essay from the pen of Mr. M. Pottie appears in the eighth volume of the *Veterinarian*. After remarking on the want of success attending the usual method of treatment, he says, "The inflammatory symptoms which characterize the foot rot in the ox, exist for several days; that, at the end of from two to eight or nine days an abscess appears and bursts, either at the side of the foot or between the toes; the effects of the first attack are not gone when another takes place; and this is followed by another and another, until the foot becomes completely disorganized, and the patient reduced to a skeleton. By this time the toes are thrown far apart, the bones are carious, there are sinuses in all directions, and an immense quantity of matter is discharged. In this state, a cow under bad management often continues from six to twelve months.

"All this, however, if the patient is put under proper treatment from

rope to and fro between the claws, so as to give considerable pain, and afterwards to dress the part with some mild caustic, such as spirit of salt. It will be found a better plan, however, after wiping the sore part with some tow, to wash it with a solution of blue vitriol, twice a day. If this does not succeed, something stronger may be used, such as a solution of two drachms of sublimate in half a pint or twelve ounces of water. *Egyptiacum* has been recom-

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the beginning may be easily and certainly avoided. All the practitioner has to do, is to produce a slough of considerable thickness and extent, from between the toes. There are several escharotics that will do this, but some are too strong, and some too weak; the former excite an intolerable degree of pain; the latter operate too slowly, requiring several applications, and often not producing mortification until an abscess has formed, when the use of any caustic is of little service. I find the powdered sulphate of copper answers the purpose better than any agent with which I am acquainted. The foot, in the first place, is well cleaned by washing with hot water and soap, it is dried, a pledget of tow is covered on one side with common tar, and over this is spread a thick layer of powdered sulphate of copper; the pledget is then introduced between the toes, placed in close contact with the digital commissure, and retained by attaching its ends to a ligature round the pastern. From the moment the escharotic begins to operate, the internal process appears to be arrested, but unless that portion of skin upon which the application is laid sloughs away, the disease will be re-established. In many cases one dressing is sufficient to produce the sloughing, in others two or three may be requisite. When the commissure is soft, yielding, and moist, one application is in general enough; others are necessary when this part is hard and horny, for then the caustic operates upon it with more difficulty. The escharotic loses its power in about forty-eight hours, and it need not be removed sooner. At the end of this time it will be seen whether or not another application is necessary. More than three dressings I have never had occasion to employ. The slough comes away with the first, the second, or the third; and subsequently, the sore is kept clean and washed once or twice a day with the acetate of zinc, or any other astringent lotion. Nothing more is required. The slough once separated the lameness disappears, and the animal returns to her food, and yields her usual quantity of milk." — ED.



mended for the purpose, mixed with tincture of myrrh and turpentine. Some aperient medicine will be necessary, and if the inflammation is considerable, the animal should be freely bled. Stall-fed cattle labouring under this disorder should be turned to grass, which will greatly tend to the purification of the blood. This disorder sometimes attacks in a more violent form; is attended with a high degree of inflammation, and swelling just above the foot, or at the back part or heel, the swelling sometimes extending all up the leg: and is accompanied with considerable fever. Copious bleeding, or until the animal becomes faint, is the best remedy in this case; and if sufficient blood can be taken from the toe, by means of a drawing knife, as in horses, it will more quickly afford relief. In one case the artery going to the claws was opened with good effect: it bled freely, and afforded more relief than was ever before observed.\* Bleeding from the toe, however, will be found more easy, and I think equally effectual. The best medicine to be given in this, as well as in the former kind, is the following saline purgative; and a field where the grass is not abundant is by far the best situation after the inflammation is abated. After bleeding at the toe, the whole foot should be wrapt in a large poultice, which should be renewed morning and evening, until the inflammation has subsided. Sometimes the swelling bursts, and a core comes out. When this has taken place, the poultice should still be continued for a day or two, and then the wound may be dressed daily, with tincture of myrrh, solution of blue vitriol, or the following ointment.

\* Bleeding from the coronet is a very convenient operation in cattle, as the veins in this situation are numerous and large.—ED.

*Ointment for the Low.*

Take of hog's lard and common turpentine, of each four ounces, melt together, and when removed from the fire, stir in of blue vitriol, *very finely powdered*, one ounce: continue stirring until the ointment is cold.

Violent inflammation sometimes takes place in the feet of cattle, from over exertion, or over driving, and requires the same treatment as the above, though more resembling the acute founder of horses in its nature; for it consists in a high degree of inflammation of the parts within the hoof, and is often attended, or preceded, by considerable fever. When the *low*, or foul in the foot, has been neglected, and becomes a chronic disorder, it is generally found difficult of cure. In such cases, it will generally be found that the cartilages, or bones of the foot, have become carious, or rotten, and then it is necessary to lay bare the carious bone, and scrape it with a suitable instrument; or, if it be the cartilage ligament, or gristle, that is affected, it should be dressed to the bottom, once with sublimate, and afterwards with solution of blue vitriol, tincture of myrrh, or Friar's balsam. This last stage of *low* resembles the canker of horses, and cannot be cured without laying bare the diseased parts, or, in other words, without going to the bottom of the disorder, and thereby curing it radically.\* When this, or any other disorder, depends upon a bad state of the blood, from improper feeding, and want of exercise, it must be obvious that change of food and exercise are essential to the cure.† The best physic is the

\* Sometimes the entire hoof is cast, but from its thinner structure is formed again with much greater rapidity than in the horse. — ED.

† Almost every lameness or disease of the foot is commonly designated "foul in the foot," whereas there are numerous other injuries to which it is liable. The foot is frequently worn almost to the quick by

saline laxative, and afterwards small doses of nitre, or nitre and rosin mixed together.

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driving on the hard road, and the animal will become exceedingly lame; here poultices will generally, by removing the inflammation, get rid of the lameness, and some tar ointment may afterwards be applied to encourage the growth of horn.

The hoof may be cut by flints or glass bottles, in which case the treatment before mentioned should also be employed. — Ed.

## CHAPTER XXII.

## DISEASES OF THE SKIN.

*Mange.*

THIS disorder is less common in cows than in horses, and is brought on by keeping the animals on unwholesome food during the winter. The itching the disease occasions makes them rub themselves against trees, or gates, until the hair is rubbed off, and the skin thickened, and drawn into folds about the shoulder, neck, or cheek, and sometimes on other parts of the body. The best situation for cows thus affected, is a field where the pasture is rather bare; and that, with a careful application of the following liniment, will soon cure the disorder.

*Liniment for Mange.*

Sulphur vivum, finely powdered and			
passed through a fine sieve	-	-	4 oz.
Train oil	-	-	12 oz.
Oil of turpentine	-	-	4 oz.
Mix.			

N.B.—Sulphur vivum is prescribed in preference to yellow, or flowers of sulphur, on account of its being cheaper, and, if finely powdered, equally effectual. The former, however, is certainly purer, and stronger, and, when expence is not regarded, should be preferred. In-veterate cases of mange may be found that will resist this remedy, but I believe very seldom, when it is properly applied, that is, well rubbed in with a hard brush, and the



parts previously curried with an old curry-comb. One good application is generally sufficient. Should a case, however, occur in which this remedy proves ineffectual, the following may be tried. Let all the diseased parts be well washed with soap and water, and a hard brush, and all the soap carefully washed off. Then apply the following lotion : —

Oxymuriate of mercury, (corrosive sublimate)	-	-	- 2 drs.
Muriatic acid, (spirit of salt)	-		- $\frac{1}{2}$ oz.
Water	-	-	- 12 to 16 oz.
Mix.			

This lotion must be used only when the other has failed, and even then must not be applied extensively. I have lately seen an account in a newspaper of an action being brought against a farrier for the recovery of damages ; some mangy cattle having died, after he had attempted to cure them by the use of a mercurial lotion, made with oxymuriate of mercury.

#### *Lice in Cattle.*

Cattle that have been half starved during winter, by being kept on bad hay or straw, in cold, damp situations, are often covered with lice : these may be killed with a strong decoction or infusion of tobacco, or with the mange ointment, prescribed in the preceding page. Improvement in keep is of course necessary, but they must not be put suddenly in good pasture, as they would then become liable to inflammatory disorders. By running on commons, or in pasture where they must work hard for their living, the digestive organs acquire strength, and then better pasture may be allowed them without danger. A de-

coction of stavesacre will kill lice, or stavesacre finely powdered, and mixed with lard and train oil.

*Warbles, Proof Worms, &c.*

These are small tumours, which, in the spring and summer, appear in various parts of the body. They are occasioned by the bite of a species of gad-fly, which immediately after deposits an egg in the punctured part. This egg gradually becomes a maggot, or worm, which inflames the part, and causes matter to form. The maggot appears to be nourished by this matter, and when mature, or fit for another change, the small abscess which has served as an habitation for it, bursts, and discharges both the matter and the maggot; the latter soon becomes a fly, and in due time deposits eggs on the skin of the animal, like its parent. From this view of the subject, we are led to admire the provision which nature has made for the prevention of more dangerous disorders. The best thing to be done is to turn the animal into barer pasture, and leave the disease entirely to nature.

## CHAPTER XXIII.

## WOUNDS, STRAINS, AND BRUISES.

THE wounds of cattle are mostly inflicted by their goring each other with their horns, or by breaking over fences; and, when deep or extensive, are generally followed by considerable inflammation. The treatment of these wounds, though represented by farriers as an intricate and mysterious branch of the art, is, in fact, very simple. When the wound is considerable, and some important part has been injured, the irritating treatment commonly adopted generally destroys the animal, and in slighter wounds their stimulating applications are often improper. In deep or extensive wounds, especially of important parts, such as the belly, the chest, joints or tendons, the most effectual means must be quickly employed, to prevent a fatal inflammation. Bleeding freely, and the saline opening drench, are the first remedies to be employed, and afterwards emollient fomentations. When the inflammation has subsided, and the wound discharges good matter, a tent of digestive ointment may be introduced daily, that it may heal from the bottom. If the opening is small, and the matter has not free vent, it should be so enlarged that no hollow part may remain, or none by which the matter may be confined. When a wound bleeds considerably, there is little danger, but if it is thought necessary to stop it, the most effectual means is pressure. It is difficult to tie the artery, or vein, as surgeons do in the human body, and is often impracticable. When the belly has been wounded, and the bowels appear through the wound, they

should be carefully put back again, and if there be any dirt about them, it should be washed off with warm water only. It may be necessary to throw down the animal in order to replace the gut, and it may be even necessary to enlarge the opening, or wound, for the purpose, through which the bowel has come out. The wound is then to be stitched up, but the stitches must be passed through the skin only, a bandage should then be applied as a further security. Punctured wounds about joints or tendons require the application of lunar caustic.

Stitching, or sewing up wounds, is not so useful as it is supposed to be: the wounds of cattle, as well as of horses, are generally attended with bruising and laceration, and if stitched up, the stitches always separate again in two or three days\*, and they sometimes cause much irritation and pain; when a flap of skin only is separated, the best plan is to cut it off.

#### *Digestive Ointment.*

Take of hog's lard and common turpentine, of each 4 ounces. Melt them over the fire, and add powdered verdigris, or acetate of copper, finely powdered, 1 ounce. When removed from the fire, continue stirring until the ointment is cold.

#### *Strains and Bruises.*

When these are considerable, bleeding is proper: and the best application is a fomentation of warm water, and a cooling lotion. In situations that will admit of it, an emollient poultice (see *Poultice*) is the best remedy. When

\* The use of metallic sutures is particularly useful, as thread or silk gives way too soon.



the inflammation has subsided, the following embrocation may be applied.\*

*Embrocation for Strains and Bruises.*

Sweet oil	-	-	-	-	2 oz.
Oil of turpentine	-	-	-	-	1 oz.
Liquid ammonia	-	-	-	-	1 oz.

Mix.

\* Sometimes the ligaments of the fetlock or the pastern joints are severely inflamed, and much heat, swelling, and tenderness is produced. Local bleeding, poultices, and rest form the best treatment, and sometimes blisters may afterwards be employed. If these cases are neglected, as they often are, there is frequently considerable bony substance thrown out around the joints, similar to ringbones in horses. When there is severe and permanent lameness produced by this bony deposit, Mr. Youatt advises the operation of neurotomy to be performed, which consists in cutting out a portion of the nerve which gives feeling to the foot, and thus by destroying sensation removing the pain. At the time when Mr. Youatt wrote his work, the operation had never been performed, but it has since, and will no doubt be again. A case is related in the *Veterinarian* for January, 1841, of the successful performance of this operation by Mr. Gutteridge. After other treatment had been tried without success, "The cow was cast and well secured with the hobbles. The diseased leg was then removed from the hobbles and extended, and a tight ligature passed round just below the knee. Then, in the centre of the back of the leg, a little inclining towards the inside, and about two inches and a half above the fetlock, the artery was recognised by the pulsation. I proceeded to make a cautious incision through the integument, dissected through the cellular substance, and the nerve was brought into view. I passed my crooked needle, armed with silk, underneath it; then gently raised the nerve, dissected it from the cellular substance beneath, and removed one inch of the nerve, my first incision being made at the upper part; in which case the pain of the second cut was not felt. The edges of the wound were then brought together, a small piece of list placed over them, and this was bandaged tolerably tight. I gave a strong purgative, and kept the cow upon bran mashes, &c. On the third day the bandage was removed and the wound dressed with tincture of aloes. The part healed in less than three weeks, but the cow got up immediately after the operation free from lameness, to the great joy, not only of the owner, but every person present. The milk which had stopped altogether, returned in a few days; and the cow is now in fine condition."—Ed.

## CHAPTER XXIV.

## ON THE DISEASES OF CALVES.

I BELIEVE almost all the diseases of calves originate in the digestive system, or rather in the fourth stomach, which is the only one required when the young animal feeds on milk, provided it is fed with moderation. When a calf is intended for the butcher, making it fat expeditiously is the object sought after, but this cannot be accomplished without due attention to the *state* of the stomach. Many farmers seem to think that fattening depends merely on giving plenty of milk; but if more than a sufficient quantity is given, instead of doing good, it oppresses the stomach, and lessens the digestive power. In consequence of this, an acid is formed sometimes in such quantity, and of such strength, as to derange the bowels, and cause scouring, and not unfrequently colic, convulsions, or cramps: it is better to give too little milk at a time than too much. It is difficult, perhaps impossible, to ascertain precisely the quantity that the stomach can take with advantage, for the appetite of young animals is sometimes a fallacious guide; but if a smaller quantity is given than the stomach is capable of digesting, it is sure of being perfectly digested. If the calf is to be reared, there is great advantage in keeping him rather lean than otherwise, for he will be less liable to disease, and, when weaned, will be found to thrive much better and be hardier. Calves that are brought up by the hand, or *at the pail*, as it is termed, should have the milk given them as fresh as possible, as it is then most easily digested: when it cannot be obtained in this state, and ap-

pears to disagree with the animal, a little powdered chalk may be added. Whenever a calf becomes costive, a laxative should be immediately given, and when he scours, the following cordial will be found effectual.

*Laxative for Calves.*

Epsom salt	-	-	-	2 or 3 oz.
Carbonate of soda	-	-	-	2 drs.
Water	-	-	-	6 or 8 oz.
Ginger	-	-	-	1 dr.

Mix.

*Cordial for Calves.*

Caraway seeds recently powdered	-	-	-	$\frac{1}{2}$ oz.
Ginger	-	-	-	$\frac{1}{2}$ dr.
Carbonate of soda	-	-	-	1 dr.
Water	-	-	-	8 oz.
Brandy or gin	-	-	-	1 oz.

Mix.

Calves are subject to several disorders during the time of sucking, of weaning, or while they are preparing or fattening for the butcher. These disorders have obtained different names, such as cords, diarrhoea, costiveness, &c. But they are nearly all owing to indigestion. Calves sometimes are of a sickly or weak constitution, and require care as to the quantity of milk they take at a time; and if they exceed that quantity their stomachs are disordered; and in consequence of this disorder, the acid which is always formed in their stomachs, for the purpose of effecting a change in the milk necessary to digestion, and the formation of chyle, is increased in quantity, and altered in quality.

In consequence of this, the milk, instead of being changed gradually, and formed into very fine curds or flakes, is coagulated quickly, and large indigestible curds are formed



from it. This produces almost all the diseases of calves. When the disorder has arrived at a certain height, the muscles are affected with spasms, and drawn into *cords*, as it is termed, that is, they contract with violence, and appear to feel knotted and hard in certain parts. Flatulency also takes place, and they become blown up, and affected with flatulent colic, which often terminates in inflammation and death. These curds frequently remain in the stomach a considerable time, and I have seen them so compressed as to be absolutely formed into cheese, perfectly solid, and smelling like new cheese, a little sourish. Hence arise the obstinate costiveness, as well as the diarrhœa that sometimes takes place. Calves that are brought up by hand, even if they are not of delicate, weak constitutions, are liable to all these affections, merely from being fed improperly, that is, from having too much milk at a time, from that milk not being sufficiently fresh, or being in a bad state, in consequence of a disordered stomach in the cow, owing, generally, to her being fed with bad hay, or stale grains. The reader must now recollect what has been said on the intimate connection there is between the udder and the cow's stomach, and how liable the milk is to become altered in quality, as well as quantity, by feeding her upon bad hay. There is a peculiar acid formed in the stomach of the cow, whenever that organ is weakened in a certain degree, which, by irritating the fourth stomach, will disorder one or more of the quarters of the udder, and spoil the milk in that quarter.

However desirable it is to cure the above mentioned diseases, to prevent them is of still more importance. The mode of prevention is sufficiently obvious: but to cure them requires some trouble, and considerable care and attention. That symptom called the cords, has at times proved very destructive, especially in Scotland, where there



is often but little grass, and much bad hay. The curative treatment will avail but little, unless the preventive treatment is also attended to, that is, unless the calf is supplied with wholesome food, and in suitable quantities. The following is the method to be pursued. The first thing to be done, is to correct the morbid acidity in the calf's stomach, which can be effected by the following medicine. Take a small knob of lime, about the size of an egg, such as will slake readily, put it into a jug that has a lip to it, and pour on it as much water as is necessary to slake it. This being done, pour on it one pint of boiling water, and having stirred it up a little, let it be covered up close. Then take a bottle that will contain eight ounces, put into it two ounces of subcarbonate of potash, commonly called salt of tartar, and fill up the bottle with the lime water, made as before directed, taking care to pour it off, not quite fine, but a little turbid; keep the bottle well corked, and mark it solution of potash.\* This is the best thing that can be given for correcting the acidity of the stomach, and the quantity here directed will be sufficient for a great number of calves. It is necessary to give one or two tea-spoonfuls of this at first, with an ounce or two of Epsom salts, dissolved in eight ounces of thin gruel or warm water. This will carry off the curd that may have accumulated in the stomach, and at the same time destroy the acidity. If the disorder is accompanied with griping pains, it is necessary to give with it a tea-spoonful of tincture of opium, or a table-spoonful of brandy, or, what is better, a table-spoonful of the anodyne carminative tincture. This will soon relieve the griping pains, without preventing the operation of the laxative. When the calf has been thus

\* A change of food is sometimes necessary until the stomach is sufficiently restored to digest milk.

relieved, it will be necessary to feed it carefully for a few days. If the bowels are loose, some gruel made of arrow-root, or fine wheaten flour should be given with a little of the solution of potash, or powdered chalk, in each feed.\* This should be left off gradually.

### *Hoarse, or Cough. †*

This disorder sometimes attacks calves, most commonly in winter, and is caused by very small worms being engendered.

\* Calves are liable to diarrhœa, which, if severe, may be treated in the same manner as advised for cattle. Mr. Youatt advises the following cordial, which is thus compounded, and is, indeed, a very desirable medicine : —

Prepared chalk	-	-	-	-	1 oz.
Powdered catechu	-	-	-	-	4 drs.
Powdered ginger	-	-	-	-	2 drs.
Powdered opium	-	-	-	-	$\frac{1}{2}$ dr.

To be mixed carefully with half a pint of peppermint water, and three or four table spoonfuls given morning and night.

† This disease consists in the presence of a vast number of small white worms in the windpipe and bronchial tubes, which produce a peculiar cough, and if not removed, ultimately occasions the death of the animal. They are more frequently found in calves than any other animal, but are sometimes met with in cows, and likewise in donkeys and in deer. They denote a morbid state of the air passages, and produce much irritation. A description of these parasites may be found in the 13th volume of the *Veterinarian*. It is written by Mr. Mayer, who throws much light on the disease. He believes the eggs are taken with the water, and being sufficiently minute, are absorbed by the blood-vessels, and thus enter the windpipe, where they are hatched. The remedy he has adopted with success, is half a pint of lime water every morning, and a table spoonful of salt every afternoon, to each calf.

A successful method of treatment is also related by Mr. Dickens, in the *Veterinarian*, vol. xiv. He says, "To each calf I gave the following draught : —

Linseed oil	-	-	-	-	4 oz.
Oil of turpentine	-	-	-	-	1 oz.
Oil of caraways	-	-	-	-	20 drops.—Mix.

dered in the branches of the windpipe. It is sometimes cured when attended to early, but if neglected at this period more commonly proves fatal. The remedy that has been found most successful is a drench, composed of a tablespoonful of oil of turpentine, a little sweet oil, with about six or eight ounces of warm water. Probably the worms

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In a day or two afterwards the beneficial effects of this were quite discernible. The animals all appeared to husk much less; the oil seemed to have acted beneficially upon the intestinal canal; and their appetite had improved. The dose was repeated to each in about ten days, and again after the lapse of another ten days; after which my patients were all well, and required no more medical assistance. I have been since called to many cases, and have pursued the same treatment, always adhering to my three doses, at the interval of ten days each; but of course I have proportioned the dose according to the age and size of my patients, the dose stated being for animals from six to ten months old."

In the *Veterinarian* for April, 1841, the following cases of hoose are furnished by a country practitioner:—"Sept. 3. 1840. I was called to see seven calves that were affected with this disease; the owner had already lost five, although, as he said, he had tried every thing. The symptoms were, respiration hurried; staring coat; a dry husk; heaving of the flanks, with difficulty of moving, or unwillingness to move. They were reduced to perfect skeletons; two were then fast sinking. The treatment consisted of inserting setons in the dewlap, and blistering the lower part of the throat. Each had from half an ounce to an ounce and a half, according to their age, of a mixture once a day, composed of spirit of turpentine, six parts; tincture opii and balsam of sulphur, of each one part; with gentian and ginger, of each one drachm. Five soon recovered; the other two died on the second day, after having taken two doses of the mixture. On examining the lungs, they appeared quite filled with these parasites, some of which, when washed and examined, were brown, and appeared dead, the others were quite alive. I had a great many under treatment during the last autumn, and was very successful after I began to administer the turpentine; but I never gave the tonic except in the case above mentioned, and when the patients were in such an exceedingly debilitated state. I have found the disease to follow the keeping of the animals upon a bare pasture from the latter end of May to the beginning of August, and with a bad supply of water. Cows are sometimes affected." — ED.



would be destroyed if the calf were made to breathe the vapour of oil of turpentine, or a mixture of turpentine and tar. I succeeded in one case that was rather recent and not severe, by giving two ounces of common salt dissolved in water, and giving a moderate quantity of good hay, morning and evening. The cause probably is a cold and moist atmosphere, and an insufficient quantity of wholesome food.

#### *Inflammatory Diseases.*

Though indigestion, from improper feeding, is the cause of most of the disorders of calves, they sometimes thrive too quickly, or form so much blood, as to be attacked with inflammatory complaints. This is not often the case during the time they are fed on milk, but frequently when they are about one year old. Inflammatory disorders are denoted by heaviness, hanging of the head and ears, watery eyes, cough, loss of appetite, and sometimes quick breathing. Bleed freely, and give six or eight ounces of Epsom salts in water. When calves are about a year old, great care must be taken to prevent these inflammatory diseases, by keeping them in bare pasture.\* This is more effectual than all medicinal preventives. Thousands of calves have been destroyed by forcing them, as it is termed, at this period, that is, by keeping them too well. Writers on cattle medicine have recommended drenches and bleeding when young stock are turned into good pasture; but how much better is it to keep them out of it? An operation has

\* Calves are more liable to inflammation of the lungs than older cattle, but for the treatment of this disease, the reader is referred to the chapter on this head for cattle. The bleeding and medicine must of course be modified according to the age and size of the calf. At six months old one fourth of the dose advised for cattle will be enough, and at a year old one half may be given.



also been proposed, and practised with success, it is said, as a preventive of inflammatory diseases, and especially of that named *quarter ill* (see QUARTER ILL), in young stock or yearlings. This operation consists in making an incision in the skin between the claws, and taking up a bluish vessel that is found there. Probably the pain of the operation, and of the sores it produces, prevents the animal from feeding so greedily, or from thriving so fast as he otherwise would.\* It has been said, but I have not met with an instance of it, that calves, when first dropped, refuse the teat, and cannot be made to suck until some salt has been rubbed on their tongue to clear it of a glutinous mucus, which is the cause of their having no appetite. When this fails, it may be advisable to add an ounce or two of Epsom salts, with two drachms of carbonate of soda, in a little whey or water. If they appear to be griped, a little anodyne carminative tincture may be given with the salts, and a little castor oil may be added. When calves appear to feed badly, and not to thrive, from half a pint to a pint of urine has been given. Probably a dose of salts would do better,

\* In any other respect this absurd operation is useless.

## CHAPTER XXV.

INSTRUCTIONS TO DAIRYMEN, FOR THE MANAGEMENT OF  
MILCH COWS.\*

THESE instructions, first digested by Professor Chabert, were printed at the royal press, in 1785, in 31 pages, 8vo. at the expense of the government, for the purpose of being distributed to some poor farmers in the district of Paris. Though it was drawn up perhaps rather hastily, extracts and copies of it were soon published in the agricultural works that came out. The Count de' Bonsi, known in Italy by several good works on the veterinary art, condescended to translate it into Italian, and added to it some notes. This translation appeared at Rimini, in 1788, in 20 pages, 8vo. The work soon circulated extensively, for it was seen that the management recommended was as applicable to other districts as to that of Paris; another impression therefore was soon called for. The second edition was considerably enlarged and improved, and was rendered more interesting by the addition of the Count de' Bonsi's notes; and this edition was more favourably received than the first. Count Balbi, Ambassador to the King of Sardinia, who was then at Paris, thinking it would prove very useful to the farmers of Piedmont, sent it to Dr. Buniva, Member of the Agricultural Society of Turin,

\* By Professors Chabert and Huzard, members of the French National Institute, &c. &c. Translated from the third edition of the French, with occasional remarks, by James White, veterinary surgeon.

who engaged M. Modesto Paralotti to translate it again into Italian, and to add such notes as would render its application more general. Dr. Buniva, himself, added to it an extensive table, showing the best method of managing the breeding of cattle in Piedmont. This translation, dedicated to the Turin Agricultural Society, appeared in 1798, in 4to. in 48 pages, and the table, with a neat vignette, representing a milch cow in a meadow. The intention of this work (says the translator) is to point out the best method of preserving and breeding an animal which, in consequence of epizootic diseases, the immense consumption of beef, and the peculiar habits of the cow, is destroyed in great numbers daily. It contains a set of simple rules or instructions, easy to be followed, suited to the capacities and circumstances of the farmer, and sanctioned by eminent and experienced veterinarians.

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THE profits of a dairy depend chiefly upon the diligence and knowledge of the dairyman or farmer; this is a truth, which has been established by experience at all times, and in all countries.

The circumstances chiefly to be attended to are the proper quality and quantity of food, and of water; the dressing or cleaning the cows (as we do horses — *Translator*); the general management of the stables, or cow-houses; the proper treatment of them from the time of conception to that of quickening, and likewise the necessary attention from that period till calving; the manner of rearing the

calves; and a careful observation of their disorders, as well as of the diseases of the cows.

*Of the Care or Management required when Cows are first taken into a Dairy.*

Cows that are brought from a distant country require particular care and attention, until seasoned, or sufficiently accustomed to the climate, soil, food, and other circumstances of their new residence. By neglecting such precaution much loss is often sustained. M. Nota, a veterinary surgeon of Piedmont, has observed, that the cows of Savoy and Switzerland, when brought into Piedmont, are subject to very serious maladies; among others, red water, which he attributes to the weakness induced by change of climate and fatigue of travelling. Many of the latter cows, notwithstanding they were supplied with excellent fodder and white water (bran-water), became so thin, that they were nearly in a marasmus, or consumption, and nothing appeared to do them any good.

The greater number of cows are purchased in the different markets; they generally arrive fatigued by travelling, and are often near the time of calving. They should be allowed a large quantity of litter, and taken out of the stable several times a day to have a little fresh air. They should also be well rubbed and brushed all over the body, but especially about the legs and joints, if they appear much fatigued, and the legs should be rolled in bandages, kept wet with warm water, with a little vinegar in it.

They should not be put suddenly upon the ordinary diet. At first they should have such food as is most easy of digestion, and it will be better if cooked. It should be given them in small quantities and frequently. They should



have water rather warm, with a little bran or meal squeezed into it, or a little salt. If they are near the time of calving, they should be bled to prevent abortion, which might otherwise happen from the fatigue of the journey. It will make their calving more easy, and less liable to be followed by unpleasant consequences.

The dealers in cattle are bound to give a warranty for a certain period after the sale, which varies in different places, but is generally nine days. The diseases which render a cow returnable are epilepsy, or megrims (*haut mal*), and scouring rot, or consumption. This was fixed by a law of the 7th of September, 1765.

If the animal dies within the period of the warranty, the loss is the seller's, by a law of the 13th of July, 1699. The dealers in cows were put upon the same footing as those that supplied the Paris market with animals for slaughter. In short, according to article 1641 of the civil code, an action may be brought on a warranty for all diseases that were hidden at the time of sale, and appear within the period of the warranty: such, for example, as any bad consequence from calving, if it has taken place previously to the sale; or when a cow has had her udder distended by keeping in the milk for a few days before she is brought to market, and this apparently good udder shall be found otherwise after the first milking or two.

If the cow falls sick or dies, or ceases to give milk within the time of the warranty, the proprietor should appear before the proper authorities, and state the cause of the disease, of the death, or of the drying of the milk. The magistrate will then direct the cow to be examined by a veterinary surgeon, who will examine her, and give a certificate, which will enable the purchaser to recover from the seller, if any deception has been practised.

*On Foddering or Feeding.*

If it is of importance to feed cows liberally, and especially such as have been recently taken into the dairy; it is no less so to give them food of the best quality: it is an established fact, that a small quantity of fodder, well chosen and of prime quality, is infinitely better than an abundance of such as is bad or even indifferent.

The fodder of cows is of two kinds, viz. dry and green. The former is given in a stable, the latter in the fields, which is the method most conformable with the views of nature. In the former case, a small quantity only of food should be given at a time, but the more frequently. In this way we prevent cows from gorging themselves, and suffering from indigestion, or from weakening the appetite, or from having a distaste for their food, from having so much put before them, and blowing upon it for some time. In eating only a small quantity at a time, they chew and grind it better, they ruminate better, and with more ease, whereby digestion is greatly facilitated; and not only the health and condition of the animal kept up, but an abundance of milk, also, is the result of a perfect digestion.

There are very few plants that may not be thus given green in the stable. Those most commonly given are lucerne, trefoil, sainfoin, colewort, wild chicory, burnet; the leaves and roots of carrots, radish, rape, cabbage, pumpkin or pompion (les citrouilles), the leaves and tender twigs of maize or Turkey corn, lettuce, the leaves and stems of potatoes and topinambour, and the tubercles of these plants, prickly broom, parsley, orach, bistort, vetches, lentils, pea and bean shells, in short, almost all leguminous plants, and the greater part of garden plants, as well as those which grow in the fields after the harvest, or in the fallows. Young thistles procure a rich creamy milk. The

leaves and tender twigs of many kinds of trees, such as the acacia, elm, ash, maple, oak, melon, poplar; the leaves and tendrils of the vine, are aliments that may be employed with advantage.

On the borders of the sea, in times of drought and scarcity, cows may be fed with the different species of algæ and fuci, and *cristes marines*, after the plants have been bruised and boiled in fresh water. Buck-wheat and nettles do well in the poorest land. Cows readily eat the latter, either when mixed with straw or steeped in hot water for a night, and given in the morning altogether, the liquor being much relished by them:—they also produce a large quantity of milk.

When roots are given to cows, it is necessary to cut them in slices, as otherwise there is danger of their choking them, an accident that often happens. Mills are made for this purpose, which are simple, and not expensive.

Experience has shown that roots are more nourishing, and give more milk, when cooked or boiled, than when raw.\*

\* This method of feeding both cattle and horses has been practised for many years on a very large scale by Mr. Curwen, who says, in a letter to Mr. Peall, Veterinary Surgeon, dated Dec. 22. 1811, "I can confirm, after great and extensive experience, every thing I have formerly advanced with respect to feeding horses with potatoes. I have found it expedient to add a little more straw, with a view of rendering the food less costly. A decisive distinction should be made between cut straw and chaff, or the husk of grain. The latter is perfectly indigestible, and dangerous. I strongly suspect I have lost horses formerly by its being used contrary to my orders. The practice of potato feeding has been adopted by several gentlemen upon a large scale, all of whom concur in declaring, that the opposition to relinquishing this mode of feeding would now be as great as it was to its adoption. I fed my horses till July this year, my stock was so great. I have found steamed straw very good food when I could do no better. You will observe, that the method I practise is that of boiling by steam. I feed 80 head of cattle, 40 milch cows, and the same number of oxen, with



In England, Holland, Germany, Piedmont, and part of Italy, they give cooked food (by steam), and find great advantage in it. Great caution is necessary in giving the young shoots of oak, ash, elm, or other trees; either of these, when eaten too freely, are apt to bring on red water, dysenteric scouring, and other serious and even mortal diseases. Cows should never eat green fodder that has become hot by lying in a heap, not only because it is difficult of digestion, but likewise from its being liable to bring on inflammatory or putrid disorders.

Green fodder should not be brought in or cut until the sun has dissipated the dew. It would be very dangerous to give it when covered with dew, as in that state it is difficult of digestion, and very apt to ferment in the rumen, or first stomach, and blow the animal, or blast him, as it is more commonly expressed; a disease that often proves fatal.\*

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steamed chaff (cut straw) and some little hay; they are in very high condition, which I attribute to the warm food. The quantity of food used is but trifling. There are very few of my milch cows that are not fit for the butcher, at the same time, that the average of milk will be between 12 and 13 quarts upon 320 days. This plan of feeding is certainly making its way; and I do not complain, when I consider that it took Mr. Cope twelve years to establish the drilling of grain in Norfolk."

The Bishop of Killala writes as follows:—

"In the winter of 1798, the period of scarcity, I fed my waggon horses upon steamed potatoes at my living in Lincolnshire; and notwithstanding the deplorable state of the fen roads, and the severe labour they underwent, they were in the highest condition possible, from the effects of the food." But some accident happening to the steaming apparatus, his lordship was reduced to the necessity of giving raw potatoes, and the consequence was, that they immediately fell away to a state that is hardly credible.

["In Essex," observes Mr. Stewart, "farm horses have been kept throughout the winter entirely upon steamed potatoes. Each horse got fifty pounds per day, and did the ordinary work of the farm with ease."—ED.]

\* Both cows and sheep are very liable to be blasted when first turned



If there is no sun, the grass should be spread out for a short time before it is given.

into clover, or any of the artificial grasses. The degree in which they are liable to this accident depends, 1st, upon the state of the animal; if it be the first time, and he has a good appetite and a strong digestive power, he will eat with great avidity, and digest quickly for some time, but at length blood will be formed in excess, and the sensorium will be oppressed. The digestive power will then flag, but the appetite will continue, until the third stomach becomes distended, and incapable of performing its office. The first stomach, or rumen, will then be overloaded, and incapable of bringing up the food for rumination, in consequence of which it will ferment. The air which is generated by the fermentation will so distend or stretch the rumen as to prevent the descent of the diaphragm, and the influx of blood into the lungs, so that the animal is soon suffocated. It seems strange that the appetite for food should continue after the digestive function has ceased; and it may fairly be presumed, that it is a circumstance which would never happen, were we to follow nature in the management of animals more carefully than we do. In the natural pastures a cow would be incapable of gorging herself in this manner. The great variety of herbage which nature has provided for them induces them to move about, in order to find the herbs most agreeable to their appetite, which probably varies, according to the state or wants of the body. When an animal that has been thus kept is turned into a field of artificial grass, as it is termed, he is like a child in the shop of a confectioner, and eats much more than is proper. It has been remarked by an experienced and intelligent farmer, that if sheep are turned into a piece of clover or vetches, when the wind is in the east, it is almost sure to blow them; for then he says, *the leaf is withered and hangs down*. In this state, perhaps, it is tough and less easily chewed. He prefers turning them in when the grass is a little wet with dew or rain, and does not keep them at first more than eight or ten minutes; they are then taken off for about half an hour, and put back again for about eight or ten minutes; after another short interval, they are turned out for good. When he finds sheep blown, he horns down about a quart of water, which sometimes relieves them, but many die before any thing can be done for them. Mr. John Lawrence advises farmers to keep a digesting place for cattle, that is, a piece of short grass, where they can find but little to eat, and use sufficient exercise in getting it. Into such a place they should be turned after feeding a sufficient time on the artificial grasses. The degree in which an animal is liable to be blasted when turned into the artificial grasses depends, secondly, upon the state of the grass. If it be young and tender, as it is when moist-

The grasses or herbs should not be cut until the flowers begin to open : before this period they are watery, and contain less nourishment ; and after this period they become more and more fibrous, stemmy, hard, tough, and indigestible. Moreover, when cut too early, they are apt to bring on a diarrhoea. When cows are put into a field, it should be after the dew has been dissipated. If the pasture is short, they may be left at liberty ; but if it is abundant, and consists of artificial grasses, such as lucerne, vetches, clover, &c. the cows should be confined by a rope to a picket or post fixed in the field, where they are kept until they have eaten the grass, and for some time after, or until they have ruminated ; they are then fixed in another spot. This change ought to take place five or six times a day ; otherwise, or by allowing them a large space, and changing them only twice or three times a day, they would be apt to gorge themselves, or after satisfying their appe-

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ened with a mild rain or dew, it is easily chewed and digested, and passes through the stomachs and bowels readily ; but if it be withered, it is tough, and not so easily chewed or thrown up for rumination, it lies closer or more compactly in the first stomach or rumen, and is then more liable to ferment. A knowledge of these circumstances should lead the farmer to adopt an effectual mode of prevention ; and if those I have just noticed are objected to, they can cut the grass, and feed them from cribs in some rough ground, or in a large yard or cow-house. The authors observe, that when the artificial grasses are in this manner, they should not be cut or brought in until the dew has been dissipated, or it would be liable to blast the animals. This position seems at first to be at variance with the opinion of the farmer before quoted ; but, on reflection, it will not appear so ; for an animal feeding in a field is in very different circumstances from one that is kept in a house. The latter would eat the grass when moist with dew with greater relish perhaps, and be therefore more apt to overload his stomach ; and it seems to me, that this precaution of the French professors would be but of little or no importance, if a proper quantity only of such grass were given at a time ; for I cannot think that there is any injurious quality in the dew. (*Translator.*)

tites, will trample upon and spoil the remainder. Little and often is a maxim that ought never to be lost sight of in feeding milch cows. By this method they thrive better, and give more milk. In summer it is necessary to take cows from the pastures during the heat of the day; as the great heat and stinging of flies cause a considerable shrinking of the milk. Cows should be turned into a field, or exercised in some way every day at all times of the year, unless the weather is very bad; during the time of exercise, their stalls should be cleaned out, and fresh litter put in. When cows are kept on dry fodder, it is of great importance that it should be of good quality, and dispensed in proper quantity; unless these conditions be observed, all other attention will be but of little use.

Fodder that has been badly kept, that has been heated, or become mouldy or dusty, such as the sweepings of barns, which are scarcely better than the husks of grain mixed with dust, and are named *balot* or *baillot* (in France), contain but little nutriment, and are productive of many disorders.

The second, or even the third crop of artificial grass, when of good quality, and cut and saved in a favourable time, appear to agree better with cows than the first crop, of which the stems are stronger and more fibrous, more difficult of digestion, and produce less milk.\*

\* It is commonly remarked by dairymen, that the young shoots of grass which spring up after hay harvest, especially when there has been some rain, are very productive of milk. It is the same with the first shoot of the grass in spring, or the early part of summer. At these periods, however, cattle appear to be most liable to inflammatory disorders, probably from an excess of blood. These tender shoots are eaten with avidity, and quickly digested, and then a more than ordinary quantity of blood must, of course, be formed. This superfluity of blood is generally carried off by an effort of nature, as it is termed; that is, a diarrhœa, or scouring, takes place, or bloody urine: but sometimes it

All the green plants we have named as good food for cows may also be given dry. Also the straw of barley and oats; the same may be given unthreshed; this, indeed, is infinitely better, more relishing, and more healthy, — wheat straw, when good and fresh, the siftings of rye, peas, beans, barley, especially when boiled; bran, chippings or raspings of bread, oil cake, hempseed, beech masts, starch dregs, grains, &c. Sometimes one or more of the above kinds of fodder are mixed with boiled roots; this is called *bouée* in most of the cantons. Cows do very well with these different kinds of food when properly dispensed; that is, when given in small quantities, and six times a day at least; if this cost some trouble, it is amply compensated for by the improved quality and increased quantity of the milk. Straw is made more palatable by mixing it with the skim-mings or second crop of hay, which for this purpose should not be quite dry, but mixed with the straw by laying layer upon layer. It will not be less palatable if sprinkled with water in which a little salt has been dissolved. It may be sprinkled at the time it is given, or a few hours before. This precaution is indispensable when cows are kept on dry fodder, as it induces them to drink a sufficient quantity of water.\*

The dairyman acts in opposition to his own interest when he does not allow his cows sufficient nourishment; and if it is true that one cow properly fed will yield as much as two

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falls upon a vital organ, especially the brain, the heart, or the lungs, and the animal is destroyed from a want of early and sufficient bleeding. (*Translator.*)

\* In two dairy farms, I endeavoured to ascertain the quantity of water each cow drank in the summer, when at liberty in the fields. In one of the farms it amounted to about 12 gallons in 24 hours; in the other to 18 gallons. It was on these farms that the advantage of giving cows pure water pumped into troughs was so clearly demonstrated. (*Translator.*)



that are badly kept, it is no less injurious to give too much food: the cows in this case fatten, but give less milk, or become quite dry, and are always wanting the bull.

One essential thing to be observed in feeding cows is not to pass too suddenly from green to dry food, or the contrary; a sudden change of food diminishes the milk, but when the change is from green food to such as is less succulent, the shrinking of the milk is more considerable. A change of stable produces a similar effect. If the new stable is too cool or too hot, a temporary shrinking of the milk is caused by the change of temperature.

### *Of Water.*

Cows should be watered twice a day, and in summer, three times; this is the more necessary when they are kept on dry food. The neglect of this precaution is the chief cause of the inflammatory diseases to which they are so subject.

It is also necessary that the water which is given them should be pure and transparent; running water should be preferred: the best of all is that which has been agitated by passing through a mill; this appears to make it softer and more favourable to digestion. It is a dangerous prejudice to believe that muddy or stagnant water is better for cattle than that which is pure. The evils arising from this prejudice are occurring daily.\*

\* An experienced dairy farmer, who keeps a large dairy farm, has lately asserted, that if it cost him ten shillings a week to water from troughs into which good water is pumped, it would be more for his interest to do so than suffer them to drink stagnant or pond water. It may be observed that cattle almost always void their excrement either in the pond or near it, immediately after drinking; and as there is generally a sloping road made to the pond, the dung that is near the pond must, in a great measure, flow into it.

The water of ponds surrounded with ash trees is often covered during the heat of summer with the cantharis fly, which the wind blows from the leaves of the trees. These insects when swallowed with the water are certainly poisonous. When no other than stagnant water can be procured, or such well water as is very hard and unfit for culinary purposes, or for washing, it should be agitated by throwing it many times from one vessel to another ; or, what is better, filtered through sand or gravel. For this purpose, a cask from which the head has been taken out is placed on a suitable situation, the bottom having many holes bored in it ; it is then covered with cloth, and upon this five or six inches of sand is placed : the water strained through this filtering apparatus is directed by a sort of funnel into the trough from which the animals drink. Water is rendered much softer, and produces more milk by being *blanched*, as it is termed ; that is, by having a little bran or meal stirred into it. Blanched water must not be kept long, as it is apt to ferment and become sour. During the heat of summer, cows are apt to become costive when kept on dry food ; in this case it is necessary to give them water in which bran and linseed have been boiled ; and even if they are not costive, it will be proper to add about a glassful of vinegar to each pailful of water when the water is of bad quality, or when the weather is very hot and dry.\*

\* I have observed, in chewing hay that is mow-burnt, that there is considerable acidity in it ; such hay, when used with moderation, may not be injurious ; but when no other can be had, and it appears to affect the health of the animal, and consequently the milk, the inconvenience may be obviated, perhaps, by sprinkling the hay with water in which salt has been dissolved, and mixing a little clay or chalk with the water they drink. Many fields abound with sorrel ; the hay of such fields must, I think, have considerable acidity in it, but it does not appear to do any harm ; on the contrary, I have been informed that cows give more milk from such pasture. Again, if we examine the flowers of clover, we find them to contain sugar ; and it may fairly be presumed

When cows become costive in hot and dry weather they should be supplied with roots that have been cooked by boiling, and broken or mixed up in the same water. Some roots should always be reserved for this occasion; if there are none, some barley, oats, or rye must be boiled instead of them, and broken up and mixed in the same water. Some portion of this decoction must be mixed with the water which is given to the cows.

*Of the Necessity of dressing (cleaning, pansement) Cows.*

It is an error to suppose that dressing by the hand with a brush and curry-comb is not as necessary for cows as for horses. A neglect of this attention is the source of many evils. Cows cannot be healthy unless the functions of the skin are duly performed; that is, unless the insensible perspiration goes on regularly; and this cannot be when

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that the sugar is not lost when it is made into hay. Though sugar may be essentially necessary to the perfection of milk, it is probable that, as in most other things, it is possible to give too much of it; nor is it unlikely that a certain portion of acid is necessary also to the perfection of milk. It appears to me that the first thing to be sought for in the management of cows is a healthy digestion, for when the digestive function is imperfect, the product of it will be so likewise, however good the food may be, or in whatever manner it may be dispensed. Common salt seems to be the best stomachic for animals when given in small quantity, and probably it is one of the best means of improving the quality of bad fodder. I have just been informed that the greatest advantage has been experienced in America from giving salt to cattle and to sheep. A tree is thrown down and *faced*, or made flat on its upper surface, on which suitable cavities or dishes are made with an adze. Into these a small quantity of salt is put daily, and it is uniformly found that they acquire an appetite for it in a short time. It is said to improve both the quantity and quality of the cows' milk, and to promote the fattening of sheep. It is a common practice to sprinkle even the best meadow hay with salt as it is put together, which in America is generally in large sheds, built for the purpose. This is the hay on which calves are fed when being reared, and with the best effect. (Translator.)

they are put into wet land, and no care is taken to remove the dirt or matter by which the perspirable vessels are obstructed. In dairies where the dressing of cows is regularly practised, they are uniformly stronger, and in better condition, are less subject to diseases, yield more milk, and that milk is of very superior quality. The cows should be dressed once a day, nor should any dung be left on their coats. This operation will not be found difficult when it is regularly practised, and plenty of fresh litter is allowed, and their dung often removed, or when they are prevented from lying down in it. Cows thus managed will be found much more profitable than otherwise; and the improvement will be observable both in the dung-heaps and in the milk.

It is generally believed that if cows have sufficient food, it is all that is necessary; but we feel no hesitation in asserting that however well cows are fed, they will not be found profitable, or not so much so as they would be, if the care and attention we have recommended in all other respects were also given them; while those that are so taken care of will be found to thrive even upon indifferent food.

It is necessary to wash the udder and teats with warm water; we thereby prevent those hard swellings which are often so troublesome, also warts and other excrescences to which the udder is subject without this attention. The udder, and especially the teats, should be washed immediately before the cow is milked.

#### *Of the Stable or Cow House.*

The most healthy stables are those which are open to the east, or have an eastern aspect, and are built on a dry and elevated situation. They are generally too close; the common opinion that cold is injurious to cows, and that they cannot be too carefully guarded against it, is the most



common cause of many of the disorders to which they are subject. Their stables, in general, are not only very low and with narrow openings, but are also shut up as closely as possible, if the weather happens to be a little cold; yet there is not, perhaps, a more pernicious or more fatal practice.

Experience has proved that cows may be kept in the open fields without shelter, without suffering any inconvenience from it, even in the coldest weather; it is better, no doubt, to keep them in a more comfortable situation, or in a stable, but the stable cannot be too open, however cold the air may be. It should be held as a general rule that a stable is too close when on entering it the breathing is affected, or there is any strong urinous smell. If it be of importance to keep stables open or well ventilated, it is no less so to keep them clean. When dung is left in them, it renders the air unwholesome, and is liable to bring on putrid disorders. When cows are kept in a stable they should not be too confined; we have seen stables where they had not room to lie down, unless it was one after another; yet each cow ought to be allowed a space of six square feet. It is a good plan to have a ventilator near the ground on the north side: this will be found the best method of renewing and cooling the air of the stable in the summer. It may be shut at pleasure, either by means of straw or otherwise. There should be a gutter behind the cows to carry off the urine and excrement, and convey them into a ditch on the outside of the stable. By these means, the animals and their habitations may always be kept clean. It is necessary also to keep pigs, rabbits, and fowls from the stable, as they make stables unwholesome. There are countries where the stables are so contiguous to the barn that the dust raised by thrashing and winnowing gets into them, and by being frequently breathed by the cows is liable to bring on peripneumony, or consumption.

The instructions contained in this and the preceding article may appear rather problematical to the generality of farmers, or those who only keep cows for the sale of their milk; for they are persuaded, and daily observation appears to demonstrate to them, that the secretion of milk is more abundant in cows that are not exposed to cold air. They depart from the principle laid down above, in shutting up the stable, and depriving the animals of light and of air during a considerable part of the year. If, however, they place in their account against this supposed increase of produce the expense of purchasing new cows to replace those that have been, we may almost say, suffocated, they may be prevailed upon to abandon this pernicious practice, and suffer their cows to feel the comfort of light and wholesome air. But prejudiced people seldom calculate, and, if they do, the calculation is too often erroneous; it is only by a series of experiments often repeated and made public, that they will be persuaded to adopt the improvements that are proposed to them.

*On the Management of Cows at the Time of Conception.*

Cows that are not in calf are generally in heat every three weeks, at which time, and at the moment they are most in heat, they should be put to the bull, as they will then conceive more readily. There are cows which continue in heat only a very short time; with such this attention is the more necessary. They are known to be in heat by the following signs. They are continually lowing and mounting each other, or upon the bull; they are restless, and often running about; there is also an elevation of the tail, a swelling of the genital parts, and a slight discharge of white glairy matter. After they have taken the bull, they should be put away and not brought again to him unless they are again in heat. There are cows that never

conceive, but continue to be in heat every three weeks : these are named *Taurellieres*. If cows that have missed are bled immediately before the bull leaps them, it will facilitate conception. It is seldom necessary to have recourse to this expedient a second time, and it will seldom succeed unless the animal is young. We have generally observed that weakly, flat-sided cows, or such as are disposed to consumptive complaints, are often in heat again after being bled. Heifers should not be put to bull before they are two years old ; they then get to a larger size, are more vigorous, and more likely to breed : if they are kept till three years old it is still better.

Cows may be put to the bull every year. The rule with regard to milch cows is not to put them to the bull again until they cease to give any milk. Experience has proved that cows which are kept without breeding for several years generally fall into a consumption.\*

*On the Management of Cows during Gestation.*

The cow goes nine months with calf ; some give milk during the whole time ; others lose their milk about the seventh or eighth month. It is the best plan, however, in either case, to cease to milk them at seven months, unless the udder should swell : in this case only half the quantity in the udder should be drawn off ; for the milk is of little value, and may be necessary to the nourishment of the foetus. Cows that are with calf should be kept in fields where the ground is nearly level, and where there are no

\* It has been observed that cows which are bred from only once in two years have calves with stronger constitutions, and which, as they grow up, greatly exceed the calves of such cows as are bred from annually. By this method, we may obtain from a cow of ordinary size and form calves of a good size, and, by pursuing this system, we may probably obtain stock of very superior size and form. (*Authors.*)

large ditches ; as abortion is often a consequence of their leaping over ditches, or slipping on very hilly or steep ground when driven into the stable at the time the fields are laid up, or in situations where it is necessary to employ dogs to keep them. Pregnant cows, and especially such as are near calving, ought to be fed better and with more substantial food than ordinary. Grain of any kind answers well, such as a few handfuls of barley or oats, or some unthrashed barley or oats. Some *good* soft fragrant hay of the second crop, or skimmings, should also be reserved for this purpose.

When pregnant cows are kept together in the same pasture, they should be carefully watched ; as they are apt to quarrel and hurt one another, and slip calf or warp from this cause. But the most common cause of abortion in cows, and the reason of their being more subject to it than any other domestic animal, is the want of exercise, the great size of the paunch, rumen, or first stomach, and the hardness of the third stomach. Abortion may be prevented therefore by giving cows sufficient exercise, and by feeding them, as we have before observed, with food that is easy of digestion, and that contains a good deal of nutriment in small bulk. Straw, chaff, and bad hay afford but little nourishment, load the stomachs and bowels, and impede the gradual growth of the calf in the womb. When the calf has acquired a certain size, the pressure of the loaded stomach causes its death, and sometimes that of the mother also.\*

\* The distension of the stomach with improper food, especially straw and bad hay, is, I believe, the most common cause of abortion, as well as of the frequent occurrence of difficult labour in cows. The other causes are unwholesome water, fog grass, or the coarse tough grass in wet situations, too much exposure to cold and wet, and fighting with each other, or leaping over ditches. In the sixth volume of *Instructions and Observations on the Management of Domestic Animals*, there is an excellent treatise on this subject. (*Translator.*)



*On the Management of Cows at the Time of Calving.*

The approach of calving is known by their bellowing, the enlargement of the udder, the restlessness of the animal, the falling of the flank and croup. The cow should then be constantly watched, that she may have assistance, if necessary, at the time of calving. The most common manner in which the calf comes forth from the womb, or the natural presentation as it is termed, is with the head and two fore-feet foremost. From the causes before noticed, however, this natural presentation is often changed; sometimes the hind legs and tail present; in either of these cases the calving may take place without assistance. If only a single leg presents itself, or the head only, or any other single part, the cow should not be left to herself to make fruitless efforts to expel the calf, but the veterinary surgeon should be immediately called in to give the necessary assistance. There should never be too much haste in affording manual assistance for the delivery, as there is often mischief done by violent and ill-timed interference. We have even seen horses employed to draw out the calf by means of cords, without any regard to the efforts of nature or labour pains, which are generally sufficient for the expulsion of the calf when the presentation is natural. This violent kind of practice often proves fatal to the cow, or causes a prolapsus or falling down of the womb, and is infallibly fatal to the calf. When the calf bladder appears, it should be sufficient to break it and let the water flow out of its own accord, and then the only assistance proper is to draw the calf gently at those times that the labour pains are observed. It is of importance also to abstain from heating drenches, such as wine with sugar and nutmeg, which are often given to hasten the discharge of the

afterbirth, but which rather retard it by the irritation they excite; such drenches should only be given when the animal appears much enfeebled, and then only by the advice of a competent judge.

If the labour is tedious and continues for some time, we should be satisfied with small quantities of nourishing food, such as oatmeal gruel, warm, and a little salted. There should always be an ample allowance of litter that the calf may not hurt himself in falling, for cows almost always calve standing. Calving often happens in winter; it is then necessary to cover the cow, and not let her go out for some days, and especially not to expose her to cold and rain.

The good condition of cows during the time they are with calf may generally be considered a presage of a fortunate delivery; it also indicates good management on the part of the proprietor, and renders particular assistance seldom necessary. Immediately after calving it is sufficient to offer the cow a little warm water, in which a few handfuls of meal have been stirred; when the animal's thirst is considerable, which is often the case, a little more of this gruel should be given in half an hour, and repeated from time to time, taking care not to load the stomach.

#### *On the Management of Cows after Calving.*

It is a common practice, as soon as cows are delivered, and the umbilical cord or navel-string is broken, to attach a small weight to it in order to prevent its return into the womb. Though this is seldom necessary, it may, nevertheless, sometimes facilitate the expulsion of the afterbirth, and prevent its being retained too long. It may therefore be done, especially in feeble cows, which, when exhausted by calving, make but weak efforts for the ex-

pulsion of the afterbirth, or cleansings. The afterbirth, or placenta, is a large bladder or sac which encloses the calf in the womb to which it adheres by tubercles, named cotyledons (*des rognons, des champignons, &c.*). A quick expulsion of the afterbirth is not an essential condition of a good or natural calving. In general, when cows go their full time, and without accident, the afterbirth comes off with scarcely any effort of the cow, in about from two to fifteen hours, more or less. These efforts are not always the same; they resemble, however, labour pains in some measure. They are weak at first, then gradually increase, becoming longer and more considerable; at last a more violent and prolonged effort than the preceding accomplishes the discharge, or cleansing, as it is termed; when the animal is in health, the cleansing should be left entirely to nature, and, on no account, should the hand be introduced in order to hasten the discharge. We have often waited until the tenth day without the least danger, not regarding the pressing solicitations of the proprietor to draw it off. It is sufficient to pull the umbilical cord which hangs out of the part, gently whenever there is a labour pain, but not to continue to draw it after the pain has ceased; and the force with which it is drawn should be proportioned to, or accord with, the effort which the animal makes; if it is too weak, it will be of no use, and if too violent, there is danger of breaking the cord, and losing this resource for assisting nature in the discharge of the afterbirth, while, at the same time, it tends to weaken the cow. It is only when the animal appears ill and depressed, and when the natural efforts are evidently insufficient, that it becomes necessary to introduce the hand for the purpose of drawing off the afterbirth; but this must be done with great care, and should not be attempted except by an experienced person. There are drenches composed of urine,

wine, with savin and rue, which are commonly given on this occasion (under the name of cleansing drenches); but we should be very cautious in the use of such drenches, as they may sometimes excite fever and inflammation of the uterus: there are but few cases in which they are required; nor should they ever be employed but when prescribed by a veterinary practitioner.\*

As to the rest of the treatment, gentle walking exercise when the weather is favourable, often repeated, and brushing the body, especially the loins and under the belly, with a wisp of hay or straw, or a piece of cloth, will promote the expulsion of the afterbirth. When cows are weak, or too long a time in cleansing, the only thing to be given is toast and weak wine, cider, or perry. When wine is preferred, it is to be mixed with an equal quantity of water. This toast should consist of five or six pints of wine and water †, and about two pounds of bread toasted: they generally eat this freely. We have also given with success an infusion of two handfuls of camomile flowers in two quarts of water, to which may be added half a pint of wine, if there appears to be occasion for it: this drink may be given every two or three hours. Some hours after, half a pailful of warm water with a little meal or fine bran stirred into

\* Since we have been appointed to the situation of official Veterinary Surgeons to the Tribunal of Commerce for the Department of the Seine, we have frequently seen inflammatory affections of the intestines and womb take place after calving, always in consequence of bad management. We do not know that any veterinary writer has hitherto described this complaint. It bears a striking resemblance to the puerperal fever of women, and, as in that malady, there is always an effusion in the abdomen. We shall give further information on this subject when we have received such communications as will enable us to establish just views of the disorder, for we presume that it would be easy to prevent it, and, perhaps, to cure it if properly treated. (*Authors.*)

† In this country, ale may be substituted.



it. This blanched water, as it is termed, should be continued for five or six days, and if the cow appears very weak, and there is great difficulty in restoring her, the wine or cider toast may be given for eight or ten days. It is necessary also in such cases to give some clysters daily of red wine and water, or of infusion of camomile. And some of the same liquor may be injected into the womb. These clysters and injections give that tone or strength to the uterus, and parts connected with it, which is required for the expulsion of the afterbirth. It is of importance not to confound the weakness which depends on an exhaustion of vital power or strength with that which depends upon oppression only. In the former case, all the external parts are relaxed and cold; the eyes are pale, there is but little heat in the mouth and vagina, the muzzle is cold and moist, the pulse small and weak, the respiration slow; in this case, the strengthening plan before noticed is necessary; but in the second case, on the contrary, the air expired by the mouth and nostrils is hot, the eyes are red and rather fierce, the mouth hot, dry, and parched, the muzzle dry, the thirst is great, breathing very quick, the vagina red and inflamed, the skin dry and tight, the pulse hard and quick: this is a real inflammatory fever, which can only be subdued by bleeding, cooling drinks with nitre, acidulated drinks with honey, and by emollient clysters. These are the only means that can be employed under such circumstances to promote the discharge of the afterbirth. Many farmers leave the afterbirth to be eaten by the cow, as soon as it is discharged, under the erroneous persuasion that it makes the cow yield more milk; others, on the contrary, take great pains to prevent them from eating it, under a conviction that it is very injurious, and is apt to bring on consumption. If we consider the natural food and habits of the animal, we shall be convinced

that neither of the opinions is correct, but still it is the most prudent plan to take it away from them. The females of all animals, whether wild or domesticated, whether herbivorous or carnivorous, generally eat the afterbirth, and we have observed that cows that are not allowed to eat it, do not appear to suffer any inconvenience from the want of it.\*

After calving, cows must not be brought suddenly to their ordinary mode of feeding, but gradually. When this precaution is neglected there is danger of indigestion and flatulent colic, in a degree proportionate to the weakness of the animal. It should be laid down as a general rule to give cows that have lately calved only a small quantity of food at a time, but to choose the most nourishing, and that which is most easy of digestion. Cooked or boiled food in such cases is always the best. It sometimes happens towards the latter end of gestation, or immediately after calving, that the vagina comes out, and sometimes the womb follows it: this is generally caused by employing improper force in extracting the calf, or the afterbirth. It is necessary in this case to call in a person who has been accustomed to put back the parts; as it is an operation not easily performed by an inexperienced person. When the vagina only comes out, it will generally be sufficient to raise the hind part of the cow considerably by means of litter or otherwise, and keep the fore parts as low as they can be.†

There are cows which have a swelling of the udder after calving from an abundance of milk; it is necessary in such case to draw off the milk gently several times a day, if the

\* Count de Bonsi has made the same observation in Italy. (*Authors.*)

† In the 6th volume of *Instructions and Observations on the Diseases of Domestic Animals*, part 2d, may be found a particular description of the method of putting back the uterus and vagina.

calf does not suck a sufficient quantity, and wash the udder with warm water, or with bran water, or a decoction of marshmallows. These means are generally sufficient, and there is no danger of their causing inflammation and abscess, diseases that require a considerable time for cure, and which are sometimes brought on by the application of butter, lard, or some rancid ointment; which are generally the applications made use of in such cases.

Sometimes pustules or sores break out in the udder, which are at first very painful, and render it difficult to milk the cows; nor is it an uncommon circumstance for the teats to become ulcerated, and nearly consumed, in consequence of the dung sticking to them. These ulcers require, after being washed with warm water, to have some soft cream applied to them, and when a crust has formed on them, a little fresh butter may be applied to get off the scabs. Some of the pustules contain a humour of a white or pearl colour, and are encircled by an areola or inflammation of the skin. This is what the English have named cow-pox, and the French vaccine. The matter of these pustules inoculated like the small-pox, is a preservative from that disorder.

It sometimes happens that cows bear two calves, which they do not bring forth at the same time, but after some interval. After the first is born, it may be known that another is in the womb, by the cow being very restless or agitated, and being continually looking round to her flanks, and having labour pains, and appearing to pay little or no attention to the calf already born. When she continues in this state a considerable time, it is necessary to assist nature, by giving the animal a pint of warm wine (beer perhaps will do as well — *Translator*), and by irritating the nostrils with tobacco, so as to excite sneezing.

If these means fail, the veterinary surgeon should be called in.\*

*On the Management of Calves.*

It sometimes happens that cows neglect to lick their calves immediately after birth; in this case, it is necessary to sprinkle on them a little salt, rubbed up with crumb of bread or bran. There are calves which do not take the teat, unless they are brought to it and the teat put into their mouths: this must be done gently and with great care.

It is a prejudice very generally entertained, that the first milk is injurious to the calf, on account of its bad quality. This is contrary to the intentions of nature, which has provided at first a serous and yellowish milk that is named colostrum, of a laxative quality, in order to carry off from the stomach and bowels of the calf some injurious matter that has accumulated in them while in the womb. This matter is called meconium. It is necessary therefore that the calf should not be deprived of the first milk.

New-born calves are fearful of cold, and it is prudent to guard them from it; but it is necessary also to guard carefully against too much heat, or shutting them up in close hot stables.

Calves should not be weaned before they are two months

\* It has been remarked in England, that when a cow has two calves, it sometimes happens that one of them is a kind of monster, in which the two sexes are more or less apparent, and both imperfect. This new kind of hermaphrodite which we have examined, and one of which has been described by John Hunter, is called by the English free martin, and is reared with great care, being considered an useful animal for work. These have not been noticed in France, though, without doubt, the same phenomenon occurs here. We wish to call the attention of farmers and veterinarians to this curious subject. (*Authors.*)



old, or at least six weeks, whether male or female, when it is designed to rear them. For such calves, there is no food so good as milk; and if the mother does not yield a sufficient quantity, it is advisable to let them suck from another cow as much as is sufficient, or bring them to drink it from the pail.\*

It is an incontestable fact, that the longer a calf sucks, he not only grows larger and stronger, but acquires also a much better form and more robust health.†

Calves designed for the butcher may be weaned earlier; but they should not be killed before they are six weeks or two months old, as their flesh would not be so good or sufficiently firm for food.‡

Calves which come early should be preferred for rearing. Those which come late, do not acquire sufficient strength to bear the cold of winter; they languish, and are reared with difficulty. Calves should not be weaned suddenly,

\* The usual method for bringing calves to drink from the pail, is to place the hand in the milk with the palm upwards and under the milk, while the fingers are raised above the surface of the milk for the calf to lay hold of with his mouth, which he does very readily, and sucks up the milk with great ease. (*Translator.*)

† Querbrat Calloet, who wrote on this subject more than a century ago, relates many examples in proof of this. Among other instances, he says, he has seen a farm where there was a number of large and small cattle, bred from the same cow and bull, and that all the large cattle had sucked longer than the others. He relates also having seen at Chartreux d'Auray, in Brittany, a large and handsome breed of cows that had sucked a long time, and their mothers were small. All depends upon this, he says, and the profit is doubled by it. See *A Method of Augmenting the Royal Revenues by several Millions*, Paris, Lanlois, 1666, in 4to. p. 21, 22. See also what has already been said on the advantages of breeding a calf once in two years only, in the note to p. 197. (*Authors.*)

‡ The sale of calves before they are six weeks old is prohibited under pain of a penalty of 300 francs. — *Letters Patent of the 1st of June, 1782, Art. 7. Ordonnance of Police of the 21 Nivose, Year 11, Att. 12.* (*Authors.*)

but by little and little. The less they are able to eat, the more they should be allowed to suck; and when they are completely taken away, they should be fed with a little bran, and some of the soft fragrant hay of the second crop: they should have also a little milk and water, or water in which barley has been boiled and broken up. They may have also skimmed milk or butter milk: there is some difficulty at first in bringing them to drink; but they soon become accustomed to it. As to the manner of rearing them, it is of importance to allow good and sufficient provender, if we desire to have them handsome. It is a common practice to feed calves that have been weaned, only twice or three times a day; but this is not often enough: it is much better to give less at a time, and more frequently. As soon as they are fit to follow the mother, they should be let out; nothing does them more good than exercise, and there is nothing, perhaps, more injurious than keeping them too long in a stable. Calves that acquire a habit of sucking themselves may be prevented by separating them from one another. They sometimes contract a habit of licking themselves, and swallowing the hair, which forms balls in their stomachs, and causes them to become thin and diseased. These habits cause them to lose flesh and become covered with lice; it subjects them also to worms, and to a disease similar to farcy. Calves cannot be kept too clean, or have fresh litter too often; for besides the evils already mentioned, if they are suffered to lie in their dung and urine, they are apt to become mangy, and scarcely ever thrive. They are subject to diarrhœa, which makes them thin, and which sometimes degenerates into a kind of dysentery which often terminates fatally. This disorder is generally cured by giving them several times a day eggs with the shells beaten up in milk, and continuing it until the scouring ceases. They should have also some clysters



in which bran has been boiled. Should these means fail, one ounce of diascoridum electuary should be given every morning for a few days; and if the excrement is very fetid, the diascoridum should be given in a glass of good red wine, or a glass of elder-flower infusion, in which half a drachm of crude sal ammoniac has been dissolved. Other calves, on the contrary, are not able to dung or void urine for some days after birth; they soon cease to suck, are often stamping with their hind feet, are short-breathed, and generally die in a short time. This obstruction in the bowels and urinary passages is generally caused by not allowing them to suck the first milk, or when the mother is kept on dry food. Whenever this disease happens, the dung should be drawn out of the fundament with the finger, the finger being first oiled, and introduced carefully, and the hard excrement taken out gradually. When this has been done, one or two clysters should be thrown up, composed of infusion of mallows or camomile, and a little sweet oil.

*On the ill Effects of Green Lucerne, and the Remedies for it.*

Lucerne given green alone, without discretion, before the flowers open, covered with dew, or wet with rain, and not yet withered a little (*flétrie*) by the sun, is apt to give cows the gripes, and blast or blow them, a disorder which sometimes ends fatally. This plant, so far from being cooling, as some have imagined, is really very heating. It not only makes the milk of middling quality, but it is even certain, and farmers who are candid acknowledge it, that this milk, taken alone, is of a heating quality. It has also been observed by farmers, that when pressed by a deficiency of other nutriment, or from economy, they are induced to keep their cows on green lucerne, and especially the second

crop, and on no other food, they are subject to eruption, and an oozing of a yellowish or reddish fluid, which generally first appears on the pasterns of the hind leg, and spreads successively to the hocks, the thighs, the udder, and the belly. It does not often attack the fore legs. The skin chops, or is drawn up into folds, and exudes a sharp humour, which gradually dries, and forms yellowish crusts or scabs, which gradually fall off with the hair, and leave the skin naked. The thighs are so inflamed that the animal feels great difficulty in lying down.

This eruption causes so much weakness sometimes that the cows cut the inside of the leg with the opposite foot, and make themselves bleed; the appetite and milk diminish, but at the same time they ruminate, and do not appear in other respects ill: it is observed that they always drink more than other cows. This disorder is commonly named *jet de la luzerne, poussée d'herbe, rafle*. It continues about fifteen days, and terminates more quickly when the farmer does not apply butter, fat from the frying-pan, or other greasy matter to it, which is a common practice with them. The using these greasy and rancid applications leaves a swelling in the legs, which is a considerable time in going off. The sooner the cause of the eruption, the lucerne, is taken away from the cow, the more quickly does the disease cease; but the farmer has not always a sufficient quantity of other food to give them: he must then mix with the lucerne as much as he can of that fodder, whether green or dry, which he can procure; which should not be given till the day after it has been cut; during this time it should be spread out, and exposed to the sun. It will be useful also to sprinkle it with water in which some salt has been dissolved, immediately before it is given, and it should be given in smaller quantity than usual. In addition to these measures, they should be allowed white water to drink;



that is, water with a little flour mixed up in it : the eruptions should be kept clean with warm water, or with an infusion of elder flowers : this, with walking exercise, pure air, good litter, and a strict attention to cleanliness, will soon subdue the disorder, which, though not of a very dangerous nature, is extremely disgusting, and cannot fail of giving those who see it a distaste for the milk.

*Of the general Signs by which Illness is indicated in Cows.*

These signs are weakness, dejection, hanging of the ears, dullness or winking of the eyes, ears and horns cold, though sometimes there is an unusual degree of heat in those parts; heat and dryness of the mouth, tongue, and muzzle; yellowness of the inside of the lips, of the eyes, of the inside of the ears, and of the skin in general; quickness of breathing, frequent bending the head, lowing or bellowing, frequent efforts to void urine, and high colour of the urine; the dung also being too hard, or too thin, too black, or too yellow, or mixed with blood. The suppression of the moisture or fluid that flows from the nostrils, the dryness and heat of the nostrils, the heat of the air that comes from the mouth and nostrils, the cough more or less hard, more or less difficult, the shrinking or drying up of the milk, ceasing to chew the cud, the coat being harsh, dry, and staring, and easily rubbed off, the dryness of the skin and its adhering to the bones, the tumours or swellings that sometimes appear suddenly, the trembling or continual agitation of the tail, — all the above signs are symptoms of some disorder, some of them of opposite natures; but as soon as any of them are observed, it is advisable to take away all solid food from the cow, and give only white water; that is, water made white by good bran or barley-meal, giving them plenty of fresh litter; and finally, to

call in the veterinary surgeon to supply any further assistance that may be required.\*

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ORDER OF POLICE, CONCERNING THE ESTABLISHMENT OF  
DAIRIES IN THE CITY OF PARIS.

*Paris, 23 Prairial, An 10 of the Republic (1801).*

THE Counsellor of State, Prefect of Police, considering that the general establishment of dairies in Paris is injurious, but that they might be permitted in some districts without inconvenience, orders as follows:—

1. There shall not be any dairy kept at Paris without special permission of the police.
2. All the dairy farmers of Paris are bound to provide themselves before the Prefect of Police within the month, with an account of the day of the publication of the present order.
3. That none, for the future, may establish a dairy in Paris without having first obtained permission.
4. Such measures will be taken with those who offend against this order as will not prevent them from following their business conformably to the rules and regulations applicable to the case.

\* We cannot conclude these instructions without pointing out to those of our readers who wish to have a more detailed and extensive treatise on the subject of milk and all that relates to it, a work entitled *Précis d'Experiences et Observations sur les différentes Espèces de Lait*; par A. Parmentier et N. Deyeux, Membres de l'Institut National de France. Strasbourg, chez F. G. Levrault; et Paris, chez Madame Huzard, An 7. 8vo.

5. The present order shall be printed, published, and posted.

The commissaries of police, officers of the peace, the commissaries of open and covered markets, the inspector general of health, and others appointed by the prefecture of Police, are charged each and whom it may concern to assist in its execution.

The general commandant of the first military division, the general commandant at arms de la place de Paris, and the commandant of the legion of picked gendarmerie and of the national gendarmerie of the department of the Seine are required to assist in enforcing these orders whenever it may be required.

(Signed)

DUBOIS,  
Counsellor of State, Prefect and  
Secretary General.

*Instructions for the Execution of the above Order.*

After the Order of the 23d Prairial, An X., no dairy can be kept at Paris without special permission of the counsellor of state, prefect of police. But this permission cannot be obtained unless the dairy is conducted and the cows kept in the manner required. It is of great importance that the dairy, and every thing which relates to it, should be conveniently situated and properly arranged. The rigorous execution of this measure is particularly necessary in Paris. If the dairy farmers of Paris had been compelled to adopt those measures sooner, there would not have been such numerous complaints as there now are against their establishments.

There is another precaution to be taken, which is no less



essential. The healthy state in which it is required that the dairies shall be carefully kept, is necessary to the health of the persons who attend, as well as that of the cattle; but the buildings commonly employed for dairies in Paris are by no means fit for the purpose. They are in general without any convenience for the distribution of the fodder, or the removal of the foul litter and dung. The stables are low, and so close that scarcely any air can get into them, which renders them damp and very unwholesome.

The greater part of the dairies are in the most close and populous situations, where the streets are narrow and the houses very high. There is no doubt that, under the present circumstances, the principal object is to preserve for the inhabitants of Paris the daily supplies which their dairies procure for them; but this consideration should not prevent us from removing the evils which accompany them. To accomplish this, there is no other expedient to be adopted than that of removing, as much as can be, the dairies from the close narrow streets into the suburbs and open places. As this measure can only be carried into execution gradually, and after obtaining an exact knowledge of all the local circumstances connected with it, it is first necessary to take an account and a particular description of all the circumstances connected with it. This account should contain a description of the situation and state of each dairy, — of the size, the height, and means of ventilation in the stables; whether there are sufficient openings for renewing the air, if there are proper drains, and a paved court; — and whether the street is large and has proper drains for carrying off the urine of the cows. It is also necessary to observe that the dairy stables fit to be preserved, and those which may be established in future, should not be less than seven feet eight inches high; as to their length and breadth, they should be proportioned to the



number of cows. A stable, for example, intended for four cows, should be at least 14 feet long.

To render the stables healthy, it is necessary that the floor should be higher than the adjoining yard, that it should be made to slope a little, and that they should be sufficiently large to allow of a free circulation of air; the window should be placed opposite to the door, in order to obtain a current of air. If the stable is separate, two windows will be more healthy than one. In stables of 24 feet two windows are indispensable, and three in one of from 46 to 62 feet in length; or even more, according to circumstances.

The security of the public and the interest of the proprietors equally require that effectual precaution should be taken relative to the places where the fodder is kept. These dépôts for fodder ought to be separated from the stables by a brick or stone wall when they immediately adjoin the stable, and by a brick or tile floor if they are over the stable. There should not be near or adjoining the dépôt any hearth, chimney, stove, or furnace.

The commissaries of police, and those appointed by them to visit the existing dairy establishments, and the places designed for such establishments, will regulate their conduct by the preceding instructions. They will draw from them the principal bases of the reports they will have to make, and will carefully enter into all the details necessary to ground a decision upon.

Given at the Prefecture of Police, the 23d Prairial, An X. of the French Republic.

(Signed)

DUBOIS,  
Counsellor of State, and  
Prefect of Police.

*Police Order concerning the Sale of Milk.**Paris, 7 Pluviose, An 12 of the Republic.*

The Counsellor of State, Prefect of Police, orders, as follows:—

1. It is forbidden to keep milk in copper vessels that is kept for sale, under pain of a penalty of 300 francs.

2. It must not be exposed to sale unless of good quality, under a penalty of 200 francs.

3. The dealers in milk are bound to use measures duly marked and certified.

4. Such measures will be taken against those who act contrary to this order, as will prevent them from following their business,—conformably to the laws and regulations provided in such cases.

5. The present order shall be printed, published, and posted. The sub-prefects of the departments of St. Denis and de Seans, the mayors and their colleagues, the commissaries of police at Paris, the officers of the peace, the commissary of open and covered markets, the inspectors of weights and measures, and other persons of the prefecture, are charged each and whom it may concern, to assist in the execution of this order.

The general in chief, governor of Paris, and the chiefs of the legion of picked gendarmerie, and of the national gendarmerie, are required to lend such a force as the occasion may require.

(Signed)

DUBOIS,

Counsellor of State, Prefect.

(Signed)

PIIS,

Counsellor of State, Prefect,  
Secretary General.

INTRODUCTORY OBSERVATIONS ON THE DISEASES OF  
SHEEP.

[THE structure of the sheep is very similar to that of the ox; we find the same arrangement of the digestive apparatus, and a very great resemblance in their diseases. On the whole, however, the constitution of the sheep does not possess the same stamina as the ox, and I take it that the system of breeding that has been adopted with success, so far as the disposition to fatten is concerned, has a tendency to render the animal more feeble in its nature, and more predisposed to disease. The evils of this system, however, are, in great measure, avoided, by the early period at which the animal is submitted to the butcher. Another fertile cause of mischief is the frequent practice of keeping sheep on land which was never intended for them by nature. Thus wet marshy land is a pregnant source of disease; and when farmers, from having little or no pasture, are constrained to keep their ewes and lambs too long on turnips, a fatality amongst the latter is the frequent consequence. Whenever, indeed, the laws of nature are outraged, debility and disease are the inevitable results.—ED.]

## CHAPTER XXVI.

## DISEASES OF THE STOMACH AND BOWELS.

*Blasting, Hoven, &c.*

THIS disorder is apt to occur when sheep are turned into clover, or any kind of pasture that induces them to feed too greedily. Many lambs are thus destroyed. I have been



informed by an experienced farmer, that he had lost many lambs in this way; and he attributed it to their eating the young shoots of wild thyme in the spring of the year. When attacked with this disorder, they swell almost to suffocation, lie down with their legs stretched out, or stand still scarcely able to breathe, and soon die, unless relieved. Some farmers stab them on the left side, or flank, with a knife, and let out the confined air. The best method, however, is to pass a probang down their throats\*, into the stomach, and give immediately after the following drench: they should then be moved about a little; and when relieved, they should be removed, and put into the barest pasture, where they should remain until the digestive system, or stomachs, are restored. A clyster also is useful.

*Drench for Sheep.*

Common salt	-	-	1 ounce.
Solution of potash	-	-	1 or 2 tea-spoonfuls.
Castor oil, or sweet oil	-	-	2 table spoonfuls.
Water	-	-	8 ounces.

[New wheat appears to be exceedingly injurious to sheep, and, if partaken extensively, soon produces death. In the *Veterinarian* for February, 1840, we find the following account from Mr. John Hawes, of Taunton:—"In the month of September, in the last year, a flock of sheep, more than 200 in number, strayed into a field where was a quantity of wheat which had not been carried in consequence of the unfavourable state of the weather. They fed rather bountifully on it before they were discovered by the shepherd,

\* The best plan is to make use of the hollow flexible tube similar to that used for oxen, but adapted in size to smaller animals. The same general plan of treatment may be observed as that recommended for cattle. — Ed.



when they were immediately removed to the pasture on which they had previously been grazing, and no further notice was taken of them until the following day, when four of them were found dead, and several others were evidently ill. To all that evinced any symptoms of disease, Epsom salts and castor oil were immediately given; but on the following morning, finding that twenty-eight had already died, and nearly as many more were almost dead, the owner sent for me, as is too frequently the case, when it was too late to be of much service. The first thing that I did was to examine some of those that had died, and I found the rumen in every instance filled with wheat, barley, and straw; the abomasum highly inflamed, as well as the bowels; the spleen had the appearance of a mass of coagulated blood, its structure being entirely destroyed; the lungs, in most of the cases, presented a healthy appearance, as did also the liver. Fifty-eight died in the course of five days after eating the wheat; the others were bled, and half a pint of linseed oil was given to each, and they recovered, but many of them have since thrown their lambs."

Sheep are occasionally destroyed by eating poisonous or noxious plants. The writer has known a considerable number killed by eating the common yew, which was used to make a temporary hedge; and though it was in a withered state when the sheep obtained access to it, yet they devoured it eagerly, and numbers of them died. Care should therefore be taken not to allow any branches of the yew tree to be placed within their reach. In such cases, little can be done in the way of treatment. The stomach and bowels should be unloaded as much as can be done, and the contents of the former may be first diluted, and then pumped out by means of the stomach-pump if possible. — Ed.]

*Flux, or Scouring in Sheep, Diarrhœa, Dysentery, &c.\**

This disorder is a consequence of keeping sheep in cold and wet situations, and feeding them with bad hay.

\* Under the various terms above mentioned, there are two diseases of the bowels, diarrhœa and dysentery. The former appears to be simply a relaxed state of the mucous membrane producing liquid fæces, whilst the latter is an inflammation of this membrane, producing not only an increased secretion, but a morbid alteration in its character. The latter is, therefore, a more dangerous disease than the former; and while this is mostly confined to the small, that principally attacks the large. Diarrhœa, however, which is very apt to run into dysentery if neglected, simply consists in an increased and liquid state of the secretions; but dysentery is attended with the symptoms of fever, such as a quick pulse, disturbed breathing, hot mouth, and the membrane of the nostrils reddened; the evacuations slimy, often hard and bloody, and sometimes offensive. In this state the animal may die in a few days, or linger on for some weeks.

The *causes* of dysentery are, a sudden change in the nature of the food, either from a wet to a dry pasture, or the reverse; unwholesome food; exposure to cold and wet; the translation of fever from another part.

The *treatment* of this disease consists in a change of food and pasture, the administration of mild laxatives, followed by tonics and astringents, as advised in a note under the head of diarrhœa in cattle. If the inflammatory symptoms are urgent, and the animal is in good condition, blood may be taken from the neck, but with caution.

As a cordial and astringent, the medicine recommended for calves at page 178. may be given.

In a useful essay on this disease, brought before the Veterinary Medical Association in January last, Mr. D. Sayer, after speaking of the nature and causes of this disease, mentions the successful treatment of a number of cases under his own observation.

The sheep, he states, were removed from a turnip field to a dry yard, and to each was administered

Linseed oil	-	-	-	2 oz.
Powdered opium	-	-	-	2 grs.
in an infusion of linseed.				

The linseed tea and gruel were repeated several times a day, and the diet consisted of turnips, mashies, and hay. On the following day they were all better, with the exception of two which died in the



Change of situation and proper food, that is, good hay or grass, is the first remedy; and if any medicine is given, it should be one fourth part of that prescribed for scouring cattle.

*Braxy, Water Braxy, Dry Braxy, Bowel Sickness.\**

Water braxy is an inflammatory disorder, which quickly terminates in dropsy of the belly or chest; dry braxy is

course of the day. To the remainder was given the following draught twice a day:—

Powdered opium	-	-	-	2 grs.
Powdered ginger and gentian, of each	-	-	-	$\frac{1}{2}$ dr.
in an infusion of linseed.				

The next day they were still better, and the draught was repeated once a day, with the addition of half an ounce of linseed oil. This was continued for four days, after which they gradually returned to their former diet.

In the discussion on the essay, Mr. Williams, a large agriculturist, stated, that he had found his sheep attacked with diarrhoea on coming from low to high lands, and were cured by a return to the former pastures. Lambs he found more liable to the disease than sheep. The medicine he employed was linseed and castor oil with chalk. Mr. Bland considered rock salt as an excellent preventive. Mr. Litt communicated the fact, that in Cumberland the disease was often cured by turning into a field in which the common tormentil or septfoil grows. This plant, Mr. Morton remarked, acted as a powerful astringent from its active principle, tannin, with which it abounded.

\* These various terms are employed in different parts to designate two inflammatory diseases; one being inflammation of a serous membrane, either of the abdomen or the chest, ending generally in an accumulation of water in these cavities; the other an inflammation of a mucous membrane, namely, that of the stomach and bowels. With regard to the former, it may be observed that it is extremely rapid in its progress, often destroying life within a short time of the first symptoms being observed. Lambs are particularly subject to this disease; and in them, as well as sheep, the disease is frequently termed *red water*, from the colour of the water which is generally found in the abdomen, and sometimes in the chest and heart bag. It frequently occurs when sheep are first put upon turnips, and is very common amongst lambs in farms where pasturage is scarce. Indeed I have known it prevail so

indigestion, or obstruction in the first and third stomach, by feeding during winter on dry sapless food, such as the tops of heather, bent, and other dry food. The symptoms of the former are quick breathing, hanging the head and ears, loss of appetite, and separating from the flock. In the latter, there is swelling of the belly, and griping pains, which often become violent. Sometimes the animal stands with its feet almost together; at others he is seen rising up and lying down nearly every minute. The mouth and tongue are dry and parched, and the white of the eye inflamed. In both diseases, bleed freely from the neck vein; and, in the latter, give one ounce of common salt, in half a pint of water, and a tea-spoonful of tincture of opium; a drachm of powdered aloes may be added, and a little ginger.

extensively as to oblige the farmer to substitute a wether flock for a breeding flock.

The *symptoms* first apparent are those of great dulness, the animal lags behind the flock, refuses to feed, is evidently in much pain, and appears tucked up in the flanks; the bowels are sometimes constipated, at others relaxed, and the feces unhealthy. The disease is evidently produced by cold applied either externally or internally, probably both.

The *treatment* must consist in the removal to a comfortable situation, bleeding very freely, and laxative medicine with vegetable tonics. The abdomen may be fomented with hot water, and as the animal gets better the food should be of a different nature from that before given.

*Dry braxy* is, as before observed, inflammation of the bowels and stomachs. It may be produced by dry and indigestible food, such as rank grass, rotten leaves, &c.

The *symptoms* are, quick pulse and breathing, the mouth and skin hot, the eyes red, and the wool clapped. The belly is sometimes swelled, and the bowels costive.

Mr. Stevenson, a surgeon, details some cases in the *Mountain Shepherd's Manual*, the majority of which were successfully treated by him. His *treatment* consisted in bleeding from the tail and the neck, or wherever blood could be obtained; after which, an ounce and half of Glauber's salts were given in a pint of warm water. In some cases common salt was given instead, and a tea-spoonful of nitre. The diet was meal and water, and boiled hay.

This mode of treatment is, perhaps, as good as any that could be advised. — ED.]



## CHAPTER XXVII.

## DISEASES OF THE CHEST, WINDPIPE, ETC.

*Inflammation of the Lungs in Sheep.*

THE most frequent and the most fatal disorder of sheep, next to the rot, is inflammation of the lungs, which occurs very commonly in the month of April, when the sun during the day is at times very powerful, and the nights and mornings are extremely cold. Lambs often die of this disorder, which they get by frisking about and overheating themselves in the hot sunshine. I was requested last spring to attend some sheep, belonging to Mr. Baker, a respectable farmer of Wookey, who, out of a flock of three hundred sheep, had lost between fifty and sixty. The symptoms were hanging of the ears, dulness of the eyes, running at the nose, cough, and quick breathing. On opening some of those that died, I found that the disorder which had occasioned their death was inflammation of the lungs and heart; and upon inquiry I discovered that the treatment employed had been bleeding, and leaving them wholly to nature. Their bleeding, however, consisted in cutting the ears, the nostril, or the lip; in which manner only a small quantity of blood could be obtained. I directed, or rather advised, that a pint of blood should be taken from the neck vein, in the same manner that it is from horses and bullocks. This was performed without difficulty, and without cutting off any of the wool from the neck; and then I desired that a dose of Epsom salts, dissolved in gruel, might be given; this also was done,

and these were the only remedies employed. Three of the sheep, that were extremely ill at the time, died, and those, I believe, were all that were lost after this treatment was adopted; all the rest recovered and became perfectly healthy. Every sheep in the flock was bled in the above case, whether effected with the disorder or not. There were but few, however, that were not affected in some degree, and they were dying very fast. It was adopted, therefore, as an useful precaution, and so it proved; for every sheep, except the three which were before in a dying state, perfectly recovered. Bleeding, therefore, was in this instance a preventive as well as a remedy. Other flocks in the neighbourhood were affected, and successfully treated in the same manner. The Epsom salt was given imperfectly, and not to the whole; and I am inclined to attribute our success, principally, if not wholly, to the bleeding. Some of the sheep fainted from the loss of blood, but soon recovered, and did very well. The quantity of blood taken off was a pint-cupful, which weighed exactly a pound. It is to be regretted, that in this, as in most other disorders of cattle, curative means, and especially bleeding, are resorted to so late. In this case, had not bleeding been employed when it was, I have no doubt that the whole flock would have been lost; for inflammation of the lungs is sometimes of the catarrhal kind, and often infectious, which was the case in this instance. It is of importance in this, as in all other inflammatory disorders, that bleeding be employed as early as possible, and freely; that is, even to faintness. It is also essential that the animal be kept in the open air, and not put into a house, as is too often the case; for there is nothing that tends more to encourage inflammatory action in the system than a warm confined air. This practice is often repugnant to the feelings of the proprietor in the treatment of catarrhal



affections, or severe colds, both in cattle and horses, for he generally imagines that warm air and warm clothing are essentially useful in those complaints; but this is a very pernicious error, as in all those complaints, whether it be a slight or a severe cold or catarrh, or even that epidemic form of catarrh named distemper, cool air, and in summer the coldest air, is of the most important use; and with the assistance of bleeding, and keeping the animal where there is but little grass, renders medicine unnecessary.

*Catarrhal Affections, Hoose, Cough, Distemper.*

Catarrh\* in sheep is similar to that in cattle, described in a former part of the book. It exists in various degrees, being sometimes trifling, and at others, both serious and dangerous. Bleeding to the extent of one pint is desirable when there is much inflammation. If any medicine is required, half an ounce of common salt, or 1 ounce of Epsom salt, dissolved in 4 ounces of thin gruel, may be given. Sheep should never be bled in the nose or ears, as is commonly done. There is no difficulty whatever in bleeding

\* Sheep are very liable to catarrh; at the fall of the year, particularly after wet weather, it is very common to find the greater part of a flock incessantly coughing and having a discharge from the nostrils. This may continue for some time, and at length gradually cease; but it often lowers the condition of the sheep, and sometimes extends to the lungs, and proves fatal. In these cases, it is very important that the animals should have a dry place to lie upon at night, and be protected as much as possible from bad weather. With this care, their colds will often leave them very soon without further treatment. In severer cases, the treatment recommended above may be pursued, or that described under epidemic catarrh, or influenza.

Occasionally, though not frequently, bronchitis, or hoose, is produced by worms in the wind-pipe. The same plan of treatment may be employed for cattle, and they should be removed to another pasture. Mr. Mayer recommends from 1 to 2 oz. of salt to be given daily, and 6 to 8 oz. of lime-water at another period of the day.—ED.

sheep in the same manner as bullocks are bled, without cutting off a bit of wool. I was lately consulted for a large flock of sheep affected with this disorder, after between fifty and sixty had died. The proprietor had been bleeding in the nose and ears, and giving some absurd remedies. I prescribed the above treatment, and, by adopting it, the rest of the flock were saved. The symptoms of the disease were clearly of an inflammatory nature, and this opinion was confirmed by an examination of the bodies of two that had just died of the disease. In both there was a high degree of inflammation of the heart and lungs, especially on the right side of these organs.

### *Influenza.*

[Sheep appear to be liable to that peculiar affection of the mucous membranes, that in the horse we designate as influenza. In a communication to the Veterinary Medical Association in December, 1839, Mr. Darby gives the following account. "On the 8th ult., I was called to attend a flock of sheep, consisting of 250 lamb-hogs. I was informed they had lost, and were losing, four or five sheep daily. The shepherd brought three dead ones from the fold that morning, and on closely examining the flock, I found the greater part to be more or less affected with influenza. The eyes were closed, or partially so; the head very much affected; a purulent discharge issued from the nostrils, and some hours previous to death, a thick ropy discharge took place from the mouth, the stench from which was abominable; a glaring eye, with an inclination to keep forming a circle, was the last symptom; and then death soon closed the scene. On examining those that had died that morning, the following appearances presented themselves: the membrane of the windpipe of a purple



colour, and the tube contained much frothy mucus; the lungs were highly congested, as were the vessels of the brain, and inflammatory patches existed throughout the whole length of the intestinal canal. The symptoms were described next day to Dr. Banks, a physician of this place, and he pronounced them to be the most decided symptoms of influenza he ever heard of in sheep. I commenced my *treatment* by giving the whole flock four drachms each of Epsom salts combined with vegetable tonics, and calculating the proper quantity of warm water, we brewed the medicine in the gross, giving each sheep a quarter of a pint of the mixture. I afterwards gave to those that required it small doses of digitalis, opium, tartarized antimony, and vegetable tonics. I am happy in being enabled to add, that after having given this medicine, I never lost a single sheep, and they are at this moment as fine a flock of hogs as any on the walks. I should have said, when I first saw them, that they were on turnips, and having two ounces each of linseed cake, with barley chaff. I had them removed from the turnips to old seeds for some days, but they are now on their usual keep. Several of them went blind, but by applying solution of sulphate of zinc and tincture of opium they have recovered their sight."

The above is a very satisfactory account of the treatment of a disease which may justly be termed influenza, for we at once recognise, in its symptoms, the low fever and the affection of the head and the mucous membranes which characterise this disease in the horse.

In the following account we also observe some of the leading symptoms, but attended with some peculiarities and apparently modified by the locality in which it appeared.

Amongst the proceedings of the *Veterinary Medical Association*, for April 1839, we find the following inter-

esting communication from Mr. Clayworth, of Spilsby, Lincolnshire.

From its similarity to that disease in the horse he terms it the influenza, and observes "that it is most prevalent in the marshes near the sea, where the land is good, but much exposed. It prevails mostly in March and April, and generally attacks young sheep." He then proceeds to give an account of a flock which he attended in 1838. "It was on the 19th that I was first desired to attend them. On my arrival I found seven or eight dead. They were observed to be ill on the day previous to my seeing them. There were eight more that could not stand; and when lifted up they had entirely lost all power of motion. On examining the remainder of the flock I found some scarcely affected at all, while others were gradually going on in the same way as those that had died.

"The first symptoms exhibited were dulness of countenance and a disinclination to join the rest of their companions, or to look out for food. They soon became more dull; a thin mucous discharge made its appearance from the nose and eyes, the tissues being highly injected; the ears drooped; a grating of the teeth was heard; and a staggering gait evinced in walking. As the disease advanced all the above named symptoms became more manifest.

"The animals were able to walk at a slow pace, but if urged into a quicker one they would fall down on their knees and then on their sides, throw their heads back, and grate their teeth as if in pain. After lying a few minutes they would get up again, although with difficulty; and their manner of walking in this stage of the disease very much resembled a horse labouring under inflamed laminae. When the disease had been allowed to run on to this height the sheep often became affected with spontaneous



diarrhœa, the fæces appearing to come away involuntarily. Those that did not purge usually voided much mucus coating the dung.

“ After this they quickly became worse ; they would lie perfectly still, as far as the limbs were concerned, but they continued to grate their teeth, and a rattling noise was heard in the windpipe, accompanied with a frothy discharge from the mouth and nose, and an occasional cough. To this death succeeded in a few hours.

“ The *treatment* I pursued with those that could not stand was, first, to place them under a shed, with plenty of dry straw to lie upon. To those affected with diarrhœa, astringents were administered, such as catechu, chalk, &c., combining them with an aromatic tonic and the spiritus etheris nitrici, while to others that were constipated in the bowels, I gave a gentle laxative, following it up with a vegetable tonic. This course of procedure appeared to be attended with benefit, for out of the number, eight that could not stand, recovered, and were able to provide for themselves in two or three days. After the exhibition of the medicine to the disease the remainder of the flock was removed into as sheltered a situation as could be found, or sheds were erected for them with plenty of dry straw to lie upon. A liberal diet of oats and hay was allowed, while their general comfort was as much attended to as possible. To many that gave indications of the approach of an attack of the malady, a laxative and tonic was combined and given.

“ On April 21st, the sheep were not only looking better, but had very materially improved. The above mentioned treatment was continued, with occasional variations, according to the circumstances of each case, and in five or six days they were all out of danger. I am happy to be

enabled to say, that after this there were not more than two or three sheep out of the flock in which the prostration of strength became so great as to render them unable to stand; and I would add that I never knew one case recover without the aid of medicine, after the disease had lasted so long as to produce the loss of power."—Ed.]



## CHAPTER XXVIII.

## DISEASES OF THE BRAIN, ETC.

*Hydrocephalus, Dropsy of the Brain, Giddiness, Goggles, Sturdy, Turnsick, &c.*

THE symptoms of giddiness depend upon hydatids, that is, animated semi-transparent bladders of water, with numerous small white opaque spots about their lower part, or neck, about the size of a pin's head, and which appear to be the germs of other hydatids. They are found in the lateral ventricles of the brain, in the substances of the cerebellum, and within the common sheath of the spinal marrow; generally in one cavity at a time, and seldom affecting the contiguous parts, unless the animal is suffered to live two or three months. They are most commonly found in the right ventricle of the brain, sometimes in the left ventricle, less frequently in the substance of the lobe of the brain, or in the cerebellum, and still more rarely in the sheath of the spinal marrow. When the hydatid is in the right ventricle, and has grown to a sufficient size to affect the organs of sense by its pressure, it produces blindness in the left eye, and by this circumstance its situation may be always known. When increased in size sufficiently, it begins to operate upon the opposite ventricle in a greater degree than upon that which it inhabits. And this it does by bursting, and gradually forcing out its fluid through the septum lucidum into the left ventricle. Thus the right ventricle is somewhat relieved for a time, and the left becomes filled with water, and common hy-

drocephalus is thus produced in it. This left ventricle then becomes more diseased than the right one, and, by pressing on the left lobe of the cerebellum, will produce paralysis of the right side of the body. Thus we see a wonderful provision is made for sustaining the vitality of the muscular system, when one side of the body has become motionless from paralysis, there being a sufficient quantity of brain left in the right lobe to sustain the vitality of the whole body. It is wonderful to observe, that after the hydatid has burst, and discharged its fluid into the left ventricle, the substance of the right lobe, which had been destroyed by its pressure, is gradually regenerated, and I have found the whole lobe nearly restored, and apparently healthy. If the sheep is killed early in the year, the hydatid will be found in perfection, and the right lobe of the brain will be nearly destroyed by it. I have found the roof of the ventricle not more than the sixteenth of an inch in thickness, and the parietal bone above extremely thin, with a small opening in one part, near that part where the horn is formed, and a little behind it. If a puncture be made through this opening, at this period, the water will gradually be discharged, and the animal will be cured.\* Sheep labouring under hydrocephalus, or giddi-

\* There are two operations recommended for the cure of this disease; one consists in passing a wire or trocar up the nostrils, through the thin plate of bone at their upper part, and through the superficial part of the brain itself. If we are fortunate enough by this method to penetrate the hydatid, it escapes through the nostrils, and, if no other exists, a cure is often effected. This operation is recommended by Mr. Hogg, the celebrated Ettrick Shepherd, who states that he has performed it successfully in many cases. The objections to it are the uncertainty of piercing the hydatid, the probability of one or more existing in other portions of the brain, perhaps towards its base, and the liability of producing inflammation of the brain. It should, however, be observed, that after the wire has entered the brain there is little or no sensibility in that portion through which the instrument passes.



ness, have been considerably relieved by bleeding in the eye vein, or nostril; it would be still better, however, to bleed from the neck vein, as in horses and cows.

Two ounces of Glauber or Epsom salts may be given with good effect.

I have found, from dissection, that common hydrocephalus is very frequent in sheep, and produces symptoms which are commonly named *goggles*, and are different from those produced by an hydatid in the lateral ventricle. In goggles, or common hydrocephalus, the water, as it accumulates, descends into the fifth ventricle, and from thence into the sheath of the medulla oblongata, and even to that of the spinal cord, in which case it often escapes upon cutting off the animal's head. In goggles, the symptoms are more serious than in giddiness, and more speedily destroy the animal. It is always, or most commonly, attended by some degree of paralysis and lameness in the fore or hind parts, generally of the left side, and an inclination of the head to one side. Like the gid, or hydrocephalus from hydatids, it is hereditary, and affords a striking proof of the weakness of the race, in consequence, I believe, of the attempts that are made to improve the breed, by crossing and removing them from their native situation.

In hydrocephalus from giddiness a sheep may live a con-

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Another operation consists in making a crucial or cross incision over the part which, from its softness, denotes the presence of an hydatid, and, if the bone has been absorbed, at once making an opening and extracting the hydatid, or, if any bone remains, removing it by means of an instrument called the trephine. The French usually puncture the hydatid with an awl, placing the animal on its back, so as to evacuate its contents, and repeating the operation several times with intervals of two days. This method is certainly at once the simplest and the most effectual; but, from the great liability of the disease recurring, it is recommended to fatten and kill the animal as soon as possible afterwards.

— ED.

siderable time, and so he may in common hydrocephalus, but this last is seldom discovered until the disorder has arrived at some height. I lately opened the head of an ewe belonging to General Bathurst, affected with common hydrocephalus, in which nearly all the water had descended into the sheath of the spinal cord, and escaped upon cutting off the head. The mischief done here was principally in the fifth ventricle, where a considerable depression was observable. The Schneiderian membrane was highly inflamed. A large hydatid, containing about four or five ounces of fluid, was attached exteriorly to the colon.

It is probable, I think, that the water found in the ventricles of the brain in common hydrocephalus, or goggles, was originally contained in an hydatid or bladder; and I have seen a case where the hydatid appeared to have forced its way through the septum lucidum into the opposite ventricle; in this way, perhaps, the bladder is sometimes burst, and common hydrocephalus produced. I have been informed that there are shepherds in Dorsetshire who cure giddy sheep without difficulty, merely by puncturing the hydatid, and applying afterwards a pitch plaister. I have several times taken out the hydatid, but always, I believe, at too late a period to do good. The sheep have lived after the operation, but did not appear to be relieved by it; they were, therefore, killed, and given to the poor. On examining the head of a giddy sheep, a soft part or spot will be found on the skull, just behind the part where the horn grows; and if the sheep is blind in one eye, which is always the case in the early stage of hydrocephalus, the hydatid will be found on the opposite side. When the soft spot I have described is felt, it may be carefully opened with the point of a pen-knife; part of the hydatid will then force its way up, and appear as a small bladder protruded through the opening that has been made. This bladder



may then be opened, and the water will gradually flow off. If the bladder is then carefully laid hold of with a pair of forceps, it may gradually be drawn out, but this has never answered, and I think it a better plan merely to open it. The shepherd's plan is probably still better, which, I believe, is merely to puncture the skull, at the soft part, with a straight awl, not longer than half an inch.

*Worm in the Horn, or Frontal Sinuses.*

This is very common in sheep, as much so in those without horns, as those that have them. They are deposited by the fly within the alæ, or flaps of the nostrils, from whence they gradually crawl up the septum nasi, or partition between the nostrils, which possesses less sensibility than the other parts within the nose; and, directed by this unerring guide, they arrive at the frontal sinus, which communicates with the bony cavity of the horn. These worms at times cause great irritation, and sometimes make the sheep almost distracted. When the worm has accomplished his purpose, he crawls out of his habitation, is thrown out upon the grass, and becomes a fly. The delirium which they sometimes occasion may be relieved by trepanning the frontal sinuses, which is a much better remedy than that commonly employed, of breaking the horn. The frontal sinuses are situated immediately above the eyes, towards the median line. Bleeding may afford some relief.

*Apoplexy.*

[Sheep are liable to this disease, which consists in a sudden determination of blood to the head, and often a rupture of the vessels, producing death in a short space of time.

The *symptoms* at first are inability to move, partial or total blindness, the vessels of the head appearing full of blood. After a while the sheep staggers, falls, and soon dies. This disease is produced by too high living, and a superabundance of fat and flesh.

The *treatment*, though frequently unsuccessful, should consist of active bleeding and purging. A pint of blood may be abstracted, and two to four ounces of Epsom salts administered.

*Inflammation of the Brain* is produced by the same cause as that before mentioned, and, indeed, sometimes succeeds apoplexy.

The *symptoms*, at first, are a dull and heavy appearance, and the eyes red and staring; but these are succeeded by the greatest violence; the animal gallops about, attacking any object or person that may engage his notice, and appears indeed in a state of delirium.

The *treatment* should be the same as that recommended for apoplexy. This disease is still more common with lambs. Mr. Tait gives an account of it in the eighth volume of the *Veterinarian*. He says, "Some time ago I was requested to look at a flock of sheep belonging to a farmer in Forfarshire. Upon enquiry, I found that the sheep, owing to the dry season (1826), had been considerably stinted in their food in the summer time, and that they had been about a month before I saw them staked in a field of very fine turnips. The appearance of the sheep was rather strange: for about a minute they appeared quite dull, and then all at once became quite frantic, dashing themselves on the ground, and running at every person within their reach: others would all at once spring from the ground, and fall down and die. I caught one and bled her copiously, which seemed to relieve her much. I then gave her a dose of

Epsom salts, which in a few days produced a cure; and by such simple treatment many of the sheep recovered. The flock was removed from the turnip field, and turnips were given to them more sparingly, which soon put a stop to the disease."—ED.]

### *Epilepsy.*

[Sheep are rather liable to epileptic fits; they are attacked oftenest in the morning, particularly if the weather is fine and chilly. Suddenly, perhaps, they will cease feeding, stagger, and run round several times, and, after falling and struggling for several minutes, recover gradually. This is a disease of the nervous system, caused perhaps by the cold or the hoar-frost: the nervous energy is disturbed, and unequally distributed. Sometimes this disease prevails so greatly as to prove a very serious loss, as the animals that are occasionally affected rarely become fat. It is very common to worry the affected animals with dogs, which often succeeds in stopping the fit; but in this disease prevention is better than a cure, and a change of pasture should be procured. Physic will probably be also of use.—ED.]

### *Palsy.*

[This disease is not uncommon in sheep, and still less so in lambs. Exposure to cold is the cause; and ewes after lambing, and lambs lately dropped, are most susceptible. Both the muscles and nerves appear affected in this disease, which is generally connected with rheumatism and sometimes with other diseases. The palsy may be either general or confined to one or more limbs. If the attack is severe, the animal rarely recovers, although it may for some time drag on its existence.



The *treatment* should commence with a removal to a comfortable place, though too much warmth must not be suddenly supplied. The limbs should be rubbed, and afterwards kept warm; and some gruel or ale, with a cordial, such as ginger, be given.

Care should be taken that no others are affected, by giving a more effectual protection to them at night, a precaution which is sadly neglected by farmers.—ED.]

*Lock-jaw, or Tetanus.*

[This disease occasionally attacks sheep, and oftener lambs; it resembles the same disease in the horse and cattle, and is usually produced by cold.

The *treatment* should consist of bleeding, purging, and opiates, and warmth applied externally.—ED.]

*The Blood, or Blood Striking, in Sheep.*

This disorder is similar to the quarter-ill of young cattle. It takes place generally in rich and inclosed pastures, where close feeding is practised. It has been often experienced by the Leicestershire graziers from putting their sheep into clover. It is said, that a great number of sheep die of this disorder in Romney Marsh, in Kent; no less than four in a hundred, in some situations, where the soil is rich, and generally in spring, when the young shoots of grasses and natural clover are full of juices. In this state, they are eaten greedily, and often prove fatal, particularly after a warm day or two. On the approach of the disorder, they are observed to separate themselves from the flock, stand as if in pain, and look dull and heavy. They heave at the flanks, or pant, or rather breathe much quicker than usual. Sometimes they drop down dead in a short time; and



seldom recover, unless bled freely. They should be bled in the neck, like a horse or bullock, and not by cutting the ears or tail, or nostril, or opening the eye vein, as is commonly practised.\* After this they should be turned into bare pasture. If they appear to be costive, an ounce or two of Epsom salt, or an ounce of common salt, dissolved in water, may be given.

\* The same plan of treatment should be adopted as that recommended for this disease in cattle, the dose being one sixth less, and the bleeding nearly in the same proportion. — ED.

## CHAPTER XXIX.

## ROT, BLAINE, OR BAIN.\*

THIS disorder often occurs in sheep, and is thought to be hereditary ; and it is as much so as any other disease in

\* The rot, or cothe, as it is in some parts termed, is one of the most fatal and destructive diseases to which the sheep is liable. Thousands of these animals every year fall victims to its visitation, and in some years this fatality is frightfully increased. The first appearance denoting the presence of this disease, is a want of liveliness and a paleness of the membranes, which may be readily ascertained by everting the upper eyelid. At first there is no want of flesh, but rather the contrary, for sheep have been known for a few weeks to acquire fat with greater speed than before. This condition, however, soon falls off, the animal becomes poorer, the skin has a yellow tinge, the eyelids are completely blanched, the eyes dull, and the animal at length dies in a state of dropsy. On examining the body after death, the flesh is found quite pallid and emaciated ; and if the sheep has reached the last stage, we notice dropsical appearances in various parts of the body, but in all cases we find in the ducts of the liver a vast number of parasitical insects, called flukes. These flukes resemble in appearance the fish called *plaice*, and are never found in the blood vessels, but only in the ducts of the liver. These insects are hermaphrodites, that is, each individual has the power of producing eggs, without any sexual connection with another ; and it has been ascertained that these eggs are produced in countless numbers, and passed into the bowels, and discharged with the excrement.

The cause of rot has been the subject of much investigation and research. It is now generally known that particular soils have a great tendency to produce the disease, and that these soils are extremely retentive of moisture. Lands that are occasionally flooded stand foremost in this liability. Whilst, however, the water entirely covers them, the danger is not imminent. It is in partial floods, or after their subsidence, that the danger of rotting becomes great. It appears, therefore, that warmth is necessary as well as moisture ; and, indeed, it is the combined operations of these agents that surely produce the disease.

any animal. That is, the predisposition or liability to the disease is hereditary ; and that disposition to the disorder is

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We have stated that flukes are always present in this disease ; but it is a matter of dispute, whether they are a cause or effect. Mr. Youatt, who, in his excellent work on sheep, has devoted considerable space to the subject of rot, considers that the flukes are an effect, and not a cause ; that the disease is produced by the inhalation of miasmata with the breath, arising from the action of the sun's rays on the moisture of the soil. This opinion, however, is disputed by others, who consider that the eggs of the flukes are taken into the stomach with the food. Mr. Edward King, in a valuable essay on the subject communicated to the quarterly Journal of Agriculture, appears to have succeeded in finding the eggs of flukes in the gall-bladder and biliary ducts, in immense numbers. He did so by taking the liver of a diseased sheep in the months of April, May, or June ; and having tied the duct of the gall-bladder, and cut it open, the eggs were found adhering to its sides and floating in the bile, and were rendered visible by the addition of water, when they appeared in hundreds of thousands, resembling grains of sand ; vast numbers of these eggs pass into the intestines, mingle with the food, and pass off with the excrement. Mr. King considers that many of these eggs are deposited on fresh plants ; and if their vitality is not destroyed by the heat and dryness of the atmosphere, but preserved by the warmth and moisture, they are swallowed with the food by sound animals, and thus produce the disease in them. If this view is correct, the disease must be regarded in some measure as infectious, and diseased sheep should always be separated from sound ones with scrupulous care. Mr. King considers that the eggs are hatched in the stomach and small intestines, and that the flukes thus created pass up the gall duct to the liver.

There is still room for much investigation as to the immediate cause of the rot. Mr. King, as far as I could understand his essay, appears to be of opinion that it is entirely produced from the eggs in the dung of diseased sheep, which, falling on marshy soils, have their vitality preserved by the combination of heat and moisture, and are washed from the dung to the grass, where they are taken up by other animals. Were this the sole cause, we should expect that in the course of time land would cease to cothe, if for some years sheep were not allowed to feed on it ; a supposition contrary to fact, as marshy lands will produce the rot, even if unfed for years. In the absence of any positive proof in support of either theory, I am inclined to consider that the eggs of flukes may owe their origin to the combined operation of

nothing more than constitutional debility. This disposition, then, is a necessary condition to the formation of the disorder, and it will always take place when the exciting causes are applied, which are cold and moisture. Water meadows, therefore, are the most productive source of the rot in sheep. If the sheep are removed, when the disorder is observed to be coming on, to a more elevated situation, where there is good pasture, it will be apparently cured, and they will live as long as they are wanted to live.

Dr. Harrison has published an excellent description of this disorder. He observes, "when in warm, sultry, and rainy weather, sheep that are grazing on low and moist lands feed rapidly, and some of them die suddenly, there is fear that they have contracted the rot." This suspicion will be further increased, if a few weeks afterwards the sheep begin to shrink, and become flaccid about the loins. By pressure about the hips at this time, a crackling is per-

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heat and moisture, and may be deposited on the blades of grass or plants in vast numbers, and may then be taken into the stomach and hatched, as before stated. I am more inclined to think that the poison, whatever it be, is imbibed with the food, than through the lungs, as the liver and the organs of digestion are the parts principally affected by the disease, the air passages altogether escaping.

With regard to a remedy for this disease, although considerable pains have been bestowed on the subject, no satisfactory result has been obtained. Salt, however, has been found of most benefit, and, if not a positive cure, is at any rate the best preventive. Marshes flooded by the sea alone do not appear to produce the disease, and salt administered internally appears to prevent the eggs from being hatched in the intestines. When sheep, therefore, have been suffered by accident or negligence to pasture on rotten land, they should be immediately removed to a dry soil, and salt should be given with their food, which should consist partly of dry fodder. As a preventive measure, draining the affected land offers the most benefit. This has already rendered a considerable quantity of rotten land not only more productive, but more healthy, and a continuance of the practice will, without doubt, abundantly repay the cost. — Ed.



ceptible; now, or soon afterwards, the countenance looks pale, and upon parting the fleece, the skin is found to have changed its vermilion tint for a pale red, and the wool is easily separated from the pelt (skin). As the disorder advances, the skin becomes dappled with yellow or black spots. About this time their eyes lose their lustre, and become white and pearly, from the red vessels on the tunica adnata and eyelids being contracted or entirely obliterated. To this succeed debility and emaciation, which increase continually until the sheep die; or else ascites, and perhaps general dropsy, supervenes before the fatal termination.

These symptoms are rendered more severe by an obstinate purging, which comes on at an uncertain period of the disorder. In the progress of the complaint, sheep often become what the graziers call *choked*, that is, affected with a swelling under the chin, which proceeds from a fluid in the cellular membrane under the throat. In five or six days after contracting the rot, the thin edge of the small lobe of the liver becomes of a transparent white, or bluish colour, and this spreads along the upper and lower sides, according to the severity of the complaint; sometimes it does not extend more than an inch above the margin. In severe cases, the whole peritoneum investing the liver is diseased, and then it commonly assumes an opaque colour, interspersed with red dark lines or patches. The upper part of the liver is sometimes speckled, like the body of a toad, to which it is thought to bear a striking resemblance; round the common bile duct and hepatic vessels, jelly-like matter is deposited, which varies according to the severity of the attack, from a table-spoonful, or less, to five or six times that quantity. Upon boiling, the liver loses its firmness, and separates into small pieces in the water, or remains soft and flaccid. Several graziers and butchers whom I have conversed with at different times, having

observed that sheep are much disposed to feed during the first three or four weeks after being tainted, omit no opportunity of promoting it, with a view to increase their profits. When the first stage is over, flukes begin to appear in the *pori biliarii*, and common duct of the liver, and in the gall bladder. At first their number is small, but as the disease advances, they increase, and before death are often very numerous. In the last stage of the complaint, they are often to be found in the stomach, as well as in the bowels and liver, and may produce either inflammation or dropsy, or both these disorders. It sometimes goes off on change of pasture, and sometimes terminates in abscess, or in hard indolent tumours. When sheep have died of dropsy, it has sometimes been named *red water*, from the fluid collected in the abdomen being mixed with blood. This dropsy, however, is preceded by inflammatory symptoms. When rot produces abscesses in the liver or lungs, the animal generally lingers for some time, and at last dies of atrophy, or consumption. The most common termination of the disease, according to Doctor Harrison, is in scirrhus, or hard knots in the liver.

## CHAPTER XXX.

## DISEASES OF THE SKIN.

*Scab.*

THIS disorder is of the same nature as the mange in horses, and may be cured by the same means; that is, by rubbing upon the diseased parts, the following liniment: sulphur vivum, finely powdered or levigated, 4 ounces, train oil from 12 ounces to one pint, oil of turpentine, 4 ounces: mix well together. This liniment must be carefully applied, so as to reach the bottom of the sores, the scabs having been previously scraped off with a blunt knife, or any suitable instrument. It has been said, that mercurial ointment will cure this disease, but there is some danger in using it; I have known several sheep die, apparently in consequence of its having been applied. If a mercurial preparation could be employed with safety, I think that the nitrated mercurial ointment would be found most effectual.\*

\* This disease, like the mange in horses, is owing to the presence of minute insects called acari, which are of both sexes, and breed in considerable numbers. It is exceedingly contagious, but is also produced by poverty and neglect. From the woolly covering of the animal, the cure of the disease is troublesome and difficult. The usual plan, and, perhaps, the most effectual, is dipping the animal in a solution of arsenic; the sheep should be previously washed, in order to insure the wash reaching the skin, and care must be taken that the solution is not too strong; half a pound of arsenic will be sufficient for twelve gallons of water. Another lotion, often successful, and recommended by Mr. Youatt, in his excellent work on sheep, consists of equal parts of lime, water, and a

There is an eruptive disease to which cattle are liable which causes itching, and is attended by little bladders in different parts of the body, and is followed by a scab. It may generally be cured by a little cooling physic, such as Epsom salts; and some simple and cooling application may be locally applied.

### *The Fly*

attacks sheep in the early part of the summer, and is particularly troublesome in woody districts. The fly deposits its eggs on the skin, preferring, however, the head, unless there are wounds or sore places. The maggots are no sooner hatched than they burrow under the skin, and torment the poor animal sadly; and, if neglected, frightful mischief is soon produced.

One of the best applications, both as a cure and a preventive, is white lead. This forms the principal ingredient in fly-powders, which some persons travel round the country for the purpose of selling. They are generally composed of—

decoction of tobacco. He also advises mercurial ointment in a weak form, viz. from three to six parts of lard with the common mercurial ointment, to be well rubbed into the skin.

The following ointment is recommended in the *Shepherd's Manual* in bad cases :—

Corrosive sublimate	-	-	-	2 oz.
White hellebore	-	-	-	3 oz.
Fish oil	-	-	-	6 quarts.
Rosin	-	-	-	$\frac{1}{2}$ lb.
Tallow	-	-	-	$\frac{1}{2}$ lb.

The sublimate and hellebore to be mixed with a portion of the oil; and, the other ingredients being melted, the whole is to be mixed together.—Ed.



White lead	-	-	-	4 parts.
Arsenic	-	-	-	1 do.
Sulphur	-	-	-	6 do.
Cinnabar of antimony	-	-	-	2 do.

Well mixed together, and applied to the parts affected and those in danger.

Oil of tar is sometimes employed with good effect to the parts affected, and a plaster is occasionally applied to the head as a preventive. A more simple measure is, however, advised by Mr. Hogg; being simply the application of coarse whale-oil, the smell of which, he asserts, will prevent the fly.

#### *Lice and Ticks*

are often very troublesome to sheep; they may be treated in the same manner as the scab. Tobacco-water, perhaps, is as useful an application as any.—ED.

## CHAPTER XXXI.

## DISEASES OF THE URINARY ORGANS, ETC.

[THE diseases attending or following parturition, and those of the urinary organs, in sheep, are much less frequent than in the cow; when, however, they are present, the symptoms resemble those of cattle, and the *treatment* should be pretty much the same.

The following disease, however, seems peculiar to sheep, and requires, therefore, particular notice.

*Retention of Urine.*

The following account of retention of urine is from the pen of Mr. Robert Read, of Crediton, who appears to have paid much attention to the diseases of cattle. It is from the *Veterinarian* of March 1840:—

“ This disorder happens to wether sheep most commonly on being turned into clover buds for the second clover crop. A country practitioner may meet with two or three cases in the course of a year. The symptoms are, a lagging behind the rest, a great disinclination to move, being easily caught, fever, the ears drooping, the eyes dull, short panting respiration, often wriggling of the tail, and standing in a position to make water. After some time has elapsed the flanks are distended, and pain is evinced on pressure being made on the sides.

“ Having clearly made out the case, the sheep should be cast on his rump, and his head bent forward so as to describe an arch. This is to be done by the assistant.

Then with the finger and thumb the prepuce should be pressed down, and the glans penis, with its appendages, will slip out. The operator will then find the appendix vermiformis urethralis: I know of no other name for it, except that it is commonly called by farmers 'the wire worm.' It sometimes is filled, and at other times partly so, with a white earthy matter, of a saponaceous feeling when rubbed between the finger and thumb, and of a slight ammoniacal smell. No doubt this is an ammoniac-magnesian phosphate, produced from an alkaline quality in the ingesta or alimentary matter.

"As the second clover crop is so apt to produce it, does it contain an excess of alkali? We know that if we take an excess of soda or potass there is, on our voiding the last drops of urine, a similar deposition on its being caught on bibulous paper. This accumulation, in sheep, is, no doubt, aided by the mucus which lines the urinary passages, and the contents of the bladder not being forcibly voided, a deposition takes place.

"The *treatment* is simple. Take a pair of scissors, and cut off the worm-like appendage above the obstruction, and the urine will instantly flow, and continue flowing for a considerable time. In some cases I have taken, or rather caught, from five to six quarts. No bad consequences ensue from the excision, but the sheep quickly recovers its wonted vigour."—ED.]

## CHAPTER XXXII.

## FOOT ROT.

THIS disorder is analogous to the grease, the thrush, and the canker of the horse, and the *Loo*, or *Loe*, or *Foul in the foot*, in cattle.

According to this opinion, if a horse, affected with grease, is put into a sheepfold, he would be likely to infect the whole flock with foot rot; and a sheep affected with foot-rot would do the same thing. This opinion, however, has not been fully established, and may admit of some doubt. The disorder, then, is supposed to be contagious, but may be produced also by other causes, and especially by keeping sheep in wet pastures, and placing them in such situations after their feet have been heated by travelling, or by improper feeding.\* The only method of curing it, is to ex-

\* This disease is produced by wet pastures; and large sheep with comparatively thin hoofs are much more liable to it than smaller animals with stronger horn. There has been some dispute as to its contagious character; but the weight of evidence is decidedly in favour of its being so. The disease consists in suppuration, and oftentimes ulceration of the sensible part of the foot which secretes the horn. The horn between the claws is generally first attacked, and very frequently the skin above it is abraded. Previously to the appearance of suppuration, the hoof feels very hot. The disease is either very simple and easily cured, or severe and protracted and remedied with difficulty. In the latter case, the hoof often sloughs off, and sinuses are frequently formed in every part of the foot, sometimes even communicating with the joints. In the greater number of cases, a removal to dry pasture, well paring the foot, detaching the separated horn, and applying a caustic, the most convenient of which is, perhaps, the muriate or butyr of antimony, will soon effect a cure. In severer cases, the inflammation



amine the foot carefully, and pare away every bit of horn, under which the disease may have formed. When this is

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may be so severe as to require poulticing; or the hoof may slough, and extensive fungus or granulations grow instead of horn. These excrescences require to be removed with a knife, and caustic afterwards applied; the hot iron being often necessary, and more effectual than other methods.

In a few cases, I have seen the joints opened, and yet the animals have at length done well with careful treatment; the fact is, there is nothing like the same degree of irritation produced by an open joint in the sheep as in the horse.

In the *Veterinarian* for January, 1840, Mr. R. Read has communicated an excellent paper on the subject of foot-rot. He observes, "Low situations, conjoined with moisture, are the fruitful and primary causes of foot-rot. Sheep in these situations have their hoofs and the integument above, to which they are united, and the highly elastic tissue situated between the claws, constantly in a wet and humid state. Go into any such pastures as that described and look at their feet:—Will there not be an increased growth of hoof? Will not the skin around the coronet, and the highly sensitive membranous tissue between the claws, be blanched? Will not the vascularity of the parts be awakened from its circulation being enfeebled? Now this is all produced by wet. In a few days, perhaps, we have a change of temperature; evaporation is produced from the surface of the land, and from animal bodies as well, and the ground becomes drier. A re-action takes place; the circulation is quickened; the hoof swells, or, rather, is pushed from the parts beneath; the skin between the claws inflames; the heels bulge; the coronet enlarges; abscesses form; matter penetrates between the horn and the substance beneath, and disunites the sensitive from the horny laminæ; and, in the worst forms of the disease, the hoof falls off. The joints, tendons, and ligaments, are soon implicated. Sometimes, from the over-shooting of the toe of the hoof, it turns back or upwards, and breaks the horny sole from the crust; gravel then gets in; inflammation is set up; a separation of the foot from its horny covering is produced; and from every part of the foot thus denuded, fungus quickly sprouts. The true foot-rot does not, as is generally thought, so often begin from below as from above. Hundreds of sheep on sharp sandy farms wear away their hoofs and soles, and expose the sensible parts. A little heat and tenderness ensue, and matter forms, which is soon replaced by fungus. This might be got rid of in a short time. It is only a spurious kind of rot, and is again produced by the injudicious paring of the horny parts by the farmers and shepherds."

done effectually, and it is better to pare away too much than too little, a saturated solution of blue vitriol will generally effect a cure, especially if dissolved in vinegar; but stronger applications are sometimes found necessary, such as spirit of salt, or a solution of red precipitate in nitrous acid, diluted with an equal quantity, or more, of water. It is necessary also to avoid the cause that produces this disorder,

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Mr. Read, deprecating the too free employment of the knife, says only sufficient horn should be taken away to afford the matter a free vent.

Mr. R. next considers the subject of the contagiousness of the disease; and, while he entertains doubts on the matter, he is rather inclined to believe in its non-contagious character.

With regard to a remedy, Mr. R. prefers a solution of bichloride of mercury, and says, "When a sheep halts, let your attendant cast him. Then, if the hoof is too long, pare it on a level with the sole; shorten the toe; and be particular in examining the foot between the claws. If it is swollen, looks red, or has any discharge of bloody serum oozing from any fissure or fissures, let the solution of the bichloride of mercury, or hydrochloric acid, be well applied to the part by means of a little tow twisted on a small flat piece of whalebone; and, in this stage of the complaint, one dressing is usually sufficient. If abscesses had formed around the coronet, and burst, they usually have two or three fistulous openings, which, with your silver probe, you will soon discover. Arm the eye of the probe with a little tow dipped into the solution, and draw it through the sinus or sinuses. If they extend into the joint, the same thing must be done. Twice is most commonly sufficient to apply the solution in these cases; and oftentimes, when you attempt to pass the probe the second time, you will not be able, from its being filled with coagulated lymph. If any of the discharge is between the crust, pare the sole, and, with a feather or syringe, apply it to the part. Fungus is sure to sprout from any part where the sole or crust is lost, and rapidly will it sprout. Agriculturists and shepherds are at a loss in curing these morbid growths, as they resist nearly all the caustic applications in use, both empirical and those contained in the materia medica. Butyr of antimony, quicksilver, and aquafortis, and numerous other applications, are of no avail, especially if the disease is of long standing. There is but one quick and effectual remedy, that is the hot iron, which will do more good in five minutes than all the caustics in our pharmacy."—ED.

by changing their situation, and giving them wholesome food. I have seen this disorder before any ulceration had taken place; it was observed by the sheep being very lame, and, on examining the foot, there was considerable inflammation in the skin between the claws, and immediately above. Lambs, as well as the ewes, were affected with it; so much so, that few of the two flocks I examined were perfectly free from it. The disease appeared to be put a stop to for a time, by applying a solution of blue vitriol, but it returned again and again in several, and did not go off until they were fed wholly on grass. They had been fed during the winter, and the early part of spring, on grains, with a little hay and what grass they could pick up. The grains were often sour, and they appeared to be remarkably fond of them in that state. Some of the sheep had a swelling of the sole of the foot, and great tenderness, as in the convex or pummice foot of horses. In many of them ulceration took place, and a separation of some of the horn. Should the solution of blue vitriol fail of curing the disease, some stronger remedy must be resorted to, such as spirit of salt (muriatic acid), nitrous acid, butter of antimony, or red precipitate, dissolved in nitrous acid.

## CHAPTER XXXIII.

## DISEASES OF LAMBS.\*

LAMBS are subject to several diseases, which depend either on constitutional debility, exposure to cold and wet, especially the latter, improper food, and sudden changes of temperature, as in the early part of the spring, when the middle of the day is sometimes hot, and the night and morning excessively cold. Even when suckers they are

\* The diseases of lambs are principally connected with the bowels; the most frequent is diarrhoea, arising from the stimulating action of the new grass before the stomachs of the young animal are properly inured to it. If the lambs appear lively, a little scouring will not be very injurious; but, if they are dull and dispirited, a mild aperient should be first given, such as Epsom salts two to four drams, with one or two scruples of ginger, in order to clear out the intestines; and it should then be followed by one or two table spoonfuls of the cordial medicine recommended for calves at page 178. If the purging continues, it is sometimes desirable to change the ewe, or substitute cow's milk boiled. The pasture should also be changed. This disease is often called the *green skit*, from the colour of the fæces; whilst the term *white skit* is used to denote another disease to which lambs are liable. The disease consists in coagulation of the milk from disordered stomach; the whey passes off, and resembles purging, of a light colour, whilst the curd accumulates, and produces constipation, which is often fatal. In this disease, the lamb appears much distressed, heaves at the flanks, and the belly is enlarged.

The *treatment* consists in giving some alkali to dissolve the mass; such as magnesia, in doses of half an ounce twice a day in gruel, and to be followed by Epsom salts in doses of two or four drachms, with a little ginger. This purgative may also be given in cases of simple constipation.

Lambs are also liable to the *blood*, or inflammatory fever, for the treatment of which the reader is referred to that disease in sheep.—Ed.



liable to indigestion and flatulent colic, either from the unwholesome state of the ewe's milk, or from sucking more than their stomachs can bear. On examining the stomach of a lamb that died of indigestion, I have found hard curds, some of them so condensed as to have the form and the smell of new cheese. The unwholesome state of the ewe's milk appeared to arise from feeding on bad hay; for, as in cows, if the stomach is disordered or weakened, the milk will be more or less imperfect: grains, or other unnatural food, will probably produce the same effect. Cold and wet situations not only weaken the whole system, but more especially the digestive system, and thereby render bad hay, and other unwholesome food, more injurious than it would otherwise be.

## CHAPTER XXXIV.

## DISEASES OF SWINE.

THESE are naturally omnivorous animals, but, by domestication, they may be made to live either on grass, grains, roots, or milk, or on animal food; but grain and roots, such as potatoes, are the best. They possess digestive organs of great strength, which are seldom diseased, although they sometimes appear ill, and without appetite, from gorging themselves with food, but soon get well by being kept without, or turned into a field to graze. They are subject, however, to inflammatory and eruptive disorders, both which require bleeding, purgatives, cleanliness, and cold air. Cold bathing is often useful to them. I have known several pigs destroyed by feeding them with sweet whey, which has been thrown into a trough from which all the pigs were allowed to feed. One or more of them has at times sucked in the whey so greedily, as to get a great deal more than his companions, and such a quantity, that fermentation has taken place, and so much air produced, as to blow up the stomach and bowels, and quickly destroy the animal. The best remedy is to introduce a probang, as described for the relief of cattle that are blasted, hoven, or blown. (See PROBANG.) It should be of a small size, such as is used for blasted sheep; that is, about one yard in length: when this cannot be had, the following drench may be given: solution of potash, as described for the cords in calves, 2 ounces; anodyne carminative tincture, 1 tablespoonful; or tincture of opium or laudanum, 2 tea-spoonful; water, 8 ounces: mix for one drench. Clysters of salt

and water will be found of great use, and may be thrown up with the common bone clyster-pipe and a calf's bladder, as for the human subject. When nothing else can be obtained, a solution of common salt, with a little ginger or mustard, and a glass of gin, may be given. It is much better, however, to prevent this disorder, by giving each pig a proper quantity only of sweet whey, or by not giving them any, until it has undergone some degree of fermentation, and become sourish. Such whey has never been known to produce the disorder. Pigs that appear off their appetite a little, and unthrifty, derive great benefit from taking one drachm of powdered antimony every day in their food. Since writing the above, I have met with several cases in which it appeared, on examining the bodies after death, that there was an accumulation of hard dung in the bowels, and a considerable degree of inflammation of the lungs. From this it appears, that after taking off as much blood as we can, an active purgative should be administered. They should afterwards be fed carefully.

*Cutaneous Disorders, Eruptive Disorders, or Disorders of the Skin, Swine Pox, Measles, &c.*

These diseases most frequently occur when many pigs are kept together, as at distilleries and large breweries, and where they are fed principally on grains and such refuse as wash, which has undergone some degree of fermentation and is possessed of an intoxicating quality. This is thought to dispose them to fatness; but it fills them with humours, and disposes them to eruptive diseases (such as measles and swine pox) which become contagious, and sometimes very destructive. Whenever grains are given, whether to horses, cattle, or pigs, they should be fresh, and given with moderation, and should form only part of their diet.

Sweet whey, as has been observed in the preceding article, has been the means of destroying many pigs by blasting them, but, if given with moderation, and after being kept a short time, proves very wholesome food. Want of cleanliness, and want of fresh air, no doubt, conduce towards the production of eruptive diseases; but the food, I believe, is the material cause. These disorders, like the exanthemata of the human body, are often attended with fever of the inflammatory kind, which may be relieved by bleeding and purging; yet these are seldom effectual, unless assisted by cool air in an open field, and that is the situation the pig should always be placed in, for grass is on such occasions the best food they can take. After recovery, they should still be kept out, and if any other food than grass is given, it should be skimmed milk with a little bran, or gurgins, or small quantities of whey. The remains of the eruptions may be removed, when the pig has acquired sufficient strength, by washing with soft soap and water, and turning him into a good bed of clean straw immediately after. The most easy method of bleeding pigs is by cutting off the tail, or part of the ear, by making an incision in the nose, or roof of the mouth, or by cutting them between the claws a little above the division.\*

#### *Purging Powder for Pigs.*

Jalap, 1 drachm. Should this be found insufficient, 10 or 12 grains of scammony may be added, or 10 grains of calomel; but it is better, perhaps, to try the jalap alone first. It is difficult to drench a pig, but, if it can be done, a solution of Epsom salts may be given with a little castor oil, or an infusion of senna; probably a solution of common salt would do when there is nothing else, especially if a little oil be given with it.

\* Pigs may be bled more freely by opening the vein on the inside of the fore arm,



[Pigs are subject to inflammatory diseases of the bowels, which may either be very acute and severe, or of a moderate kind. In the former, the symptoms are, considerable pain, heat, and tenderness of the abdomen, quick pulse, and much fever, and often costiveness.

The *treatment* consists in copious bloodletting, oily laxatives, internally assisted by clysters and warm baths, or fomentations to the abdomen. In the milder form of the disease the symptoms are less urgent, and the treatment need not be so active.

The following useful account of an inflammatory disease of the intestines is communicated by Mr. Mayer of Newcastle to the *Veterinarian* for August, 1841:—"A butcher bought five small pigs from a neighbouring gentleman; after having them three weeks confined in a pigsty where the air was foul, and keeping them upon impure wash and the offal of his slaughterhouse, they began to droop and lose their appetite. The bowels became constipated, the fæces being hard and scybalous; tremulous fits and spasmodic twitchings of the muscles came on in two of them, one of the worst having not less than thirty or forty fits in the twenty-four hours, accompanied with a champing and foaming of the mouth. At the period of attack they kept backing involuntarily, till they tumbled over backward. When moving forward, they reeled and staggered, unconscious where they were going, until they got their snouts fixed in a corner, where they would remain, supporting and steadying themselves a short time. One died the second day after we saw them, the other was pitched upon the dunghill to be buried, the butcher conceiving it was dead; but my son found that there was a little animation left in one from a slight twitching of his extremities, and the breathing being just perceptible.

"On opening the pig which was really dead, we found

much cerebral congestion, accounting for the loss of power over the motor muscles of the frame, and the disposition to go backward and tumble over.\* The thoracic and abdominal viscera were in an equally congested state; the mucous membrane of the stomach and bowels highly inflamed, and of a beautiful crimson hue.

“*Treatment.* We commenced by immersing them frequently throughout the day in warm baths, wiping them quite dry, and having plenty of dry litter about them. Calomel, rhubarb, and oleaginous purgatives were administered, to get the bowels regulated. In the worst case the animal lay senseless, and incapable of either standing or walking, but convulsively twitching all over the body; clysters were repeatedly given, and fever powders combined with a diffusive stimulant, and oleaginous purgatives administered several times throughout the day. In the other cases an antiphlogistic treatment was adopted, with the administration of oleaginous aperients and occasional doses of calomel and rhubarb, as each case indicated its necessity. In about a fortnight from the attack, there broke out an eruption all over the body, forming small, red, irregular, elevated patches. They all recovered in three weeks; but the worst of them was some days before he could walk or stand, having a strong disposition to reel over or tumble backward. For the first fortnight they were obliged to be drenched with oatmeal porridge, the milk being thinned down with water. Their appetite returned very slowly, but although fresh water was regularly placed for them they seldom touched it.”—ED.]

\* Swine are occasionally affected with *inflammation of the brain*, which is denoted by dulness and often violence and convulsions, and sometimes blindness. The treatment should consist of copious bleeding and oily purgatives. Mr. Cupiss advises bleeding from the vein inside the fore arm, about an inch above the knee; a dose of croton oil, and two grains of hellebore, twice or thrice a day, and keeping the head cool with wet cloths.—ED.

INTRODUCTORY OBSERVATIONS ON THE DISEASES OF  
THE DOG.

THE anatomical structure of the dog differs widely both from that of the horse and the cow; he has a single stomach, but it is much larger in proportion to the bowels than that of the horse, and, unlike it, possesses the power of vomiting even in a greater degree than in the human subject. The dog is an omnivorous animal, and his digestive system somewhat resembles that of man, although he is capable of taking a much greater proportion of animal food. Like man, too, the nervous system of the dog is highly developed. Such being the comparative structure of this animal, we cannot be surprised at the fact, that his diseases bear a much greater resemblance to those of the human subject than to those of the larger animals, and that the principles on which they must be treated are pretty much the same. Thus we find both in the dog and in man, that the system in general is quickly acted on through the medium of the stomach, and that by exciting vomiting, we may produce a considerable sedative effect on the heart and arteries, which in many cases precludes the necessity of bloodletting. The bowels too are readily acted on by the same medicines, although a larger proportionate dose is generally required. The nervous system in the dog is also quickly excited, and he is more subject to diseases of this system than most other animals.—ED.

## CHAPTER XXXV.

## DISEASES OF THE STOMACH AND BOWELS.

*Inflamed Stomach.*

IN this disorder the dog is constantly vomiting, especially after taking food, whether solid or liquid. Bleeding and abstinence are the only remedies. It is often followed by diarrhœa, which never should be suppressed by opium. Arrow-root gruel will serve both as food and as a remedy. If it causes vomiting, no more should be given; abstinence, in that case, is the only remedy.

*Inflammation of the Bowels.\**

This disorder generally depends on costiveness and flatulency. The dog should be bled largely, and clystered;

\* Dogs are very liable to inflammation of the bowels, which is of several kinds: sometimes it is produced by costiveness, which may exist several days before inflammation comes on; in other cases it may be caused by cold or improper food, or by a diseased state of the liver.

When costiveness is at once the cause, and the leading symptom, the chief thing is to effect its removal; the hard dung should be removed from the rectum by means of the handle of a spoon, and injections thrown up, after which a strong dose of castor oil may be given, from half an ounce to two ounces; and, if it fail in its effect, aloes from half a drachm to two drachms with several grains of calomel should be tried, but not if the pain is acute. In some cases, one, two, or more drops of croton oil will succeed. The belly should be fomented, or the dog placed in a warm bath.

*Bilious inflammation* is denoted by offensive and often black vomitings and purgings. A mild oily laxative should be first given, followed by —

Calomel	-	-	-	-	10 grs.
Opium, powdered	-	-	-	-	4 do.

To be made into four or eight pills, one of which should be given three times a day.



and if the griping pains are severe, about twenty drops of tincture of opium should be given, with about one ounce of castor oil ; the dose must be repeated once or twice if necessary, and the clyster several times.

*Costiveness.*

This symptom is very common to old dogs.\* Clysters are very useful, and the best purgative for them is calomel and jalap. Bones are bad food for them ; oatmeal gruel with milk is the best food.

*Diarrhœa, or Looseness. †*

This is always occasioned by improper feeding, and sometimes by a secretion of acrid bile. Tying up the dog

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If the purging continue severe, the astringent recommended for diarrhœa may be given. Inflammation from cold is accompanied by greater pain than the varieties before noticed. There are also severe vomitings, and the belly feels hot and extremely tender, and may be thus distinguished from colic.

The dog should be bled freely, placed in a warm bath, or the belly fomented frequently, and an oily laxative or Epsom salts administered both as a draught and injection. The laxative must be regulated or repeated according to the state of the fæces. When they are not relaxed, calomel and opium, from a quarter to two grains of each, may be given every four hours, omitting the calomel, however, if there be any purging. — ED.

\* The treatment of costiveness may be found in the previous note. — ED.

† This symptom sometimes proceeds from worms, and, as hereafter observed, frequently attends distemper. It may also proceed from disordered liver, but more frequently arises from irritation of the mucous coat of the bowels, which, if neglected, goes on to inflammation. The stools, in these cases, are often mixed with blood and mucus, and are very offensive. It is better at first to get rid of the offensive matters by means of a mild laxative, such as Epsom salts, 1 drachm to 4, according to the size of the dog, and follow it by prepared chalk, a scruple to a drachm ; catechu, 5 to 10 grains ; opium,  $\frac{1}{4}$  to 2 grains twice a day.

without food for some time is a necessary remedy, and sometimes sufficient; if not, small doses of Epsom salts, dissolved in gruel, should be given. If attended with severe griping pains, about twenty drops of tincture of opium may be added.

*Colic, or Gripes.*

Dogs are subject to griping pains of the bowels, almost always from costiveness.\* Clysters and castor oil are the best remedies. The oil, however, should be given in the dose of a table-spoonful every hour, and the clysters repeated from time to time, until complete relief is afforded.

*Worms. †*

I have met with different kinds of worms in dogs, but most commonly with the tape-worm, and another that I

Sickness often attends diarrhœa, and may be treated as before advised, but if there is no looseness a few drops of laudanum in boiled milk will often effect a cure. Sometimes it is a symptom of bilious inflammation, and should be treated as such. — ED.

\* Spasms of the bowels are often connected with rheumatism, and is then accompanied by a painful affection of the limbs. The dog should be immersed in a warm bath, and the following draught administered as advised by Mr. Blaine:—

Æther	-	-	-	-	20 to 60 drops.
Laudanum	-	-	-	-	20 to 60 drops.
Camphor	-	-	-	-	3 to 6 grs.

In a little ale, or wine and water.

If the symptoms continue, injections may be thrown up, containing from ten to twenty drops of tincture of opium. — ED.

† The dog is liable to various sorts of worms; to the tape-worm, which sometimes consists of several hundred joints, and is removed with great difficulty. The teres, or long round worm, which is sometimes vomited from the stomach. The ascarides, or thread-worms, which principally affect the rectum, and occasion troublesome itching. A species of bot, or grub, which is less frequent than those above noticed; besides a still rarer sort noticed by the author.

have named the ribbon-worm, from some resemblance it bears to a very narrow white ribbon, the transverse threads of which are most conspicuous. On examining the worm, however, with a magnifying glass, these transverse lines appear as scales placed nearly perpendicularly, and inclining a little backward. One end of the worm has a bulbous appearance, and with this it attaches itself to the bowels; the other end is flat and square. I have lately had some of these worms brought to me that were voided by a man; he called them blood-worms; and, from some that I have seen, it appears that they do sometimes suck blood from the bowels; they may, therefore, be considered, perhaps, as a species of leech, and, as they have been seen in a stream of clear water, it is probable that they are taken into the stomach with the water the animal drinks.

This subject is one of importance; for I have discovered, that in a village where I have occasionally resided, named Oak-hill, where all the water with which the inhabitants are supplied flows over the surface through fields, that the inhabitants are very subject to worms, and several of them to tape-worms, and that many of their domestic animals are infested with this small species of leech-worm. I have known long tape-worms brought off from several of the inhabitants, and have found the small leech-worm after death in the small intestines of their domestic animals; even in the dog and the cat. Horses I find, especially

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The *symptoms* of worms are, voracious appetite, poor condition, staring coat, fetid breath, and sometimes fits.

The *treatment* of tape-worm consists in two to four drachms of spirits of turpentine, with the same quantity of olive or castor oil, or the yolk of an egg, and given once or twice a day for several days. *Ascarides* are best removed by turpentine injections, and the other varieties by tin or iron filings or ground glass, two drachms being sufficient for four or eight pills, one of which may be given once a day. Salt given with the food will often prevent the breeding of worms.—Ed.

when affected with mesenteric consumption, have generally got them. The longest leech-worms are those found in the bowels of the dog and the cat, where they are well supplied with chyle, though the habitation is much smaller. In the consumptive horse they are generally small, and I have seen them literally starved, and full of grumous blood. I should not have noticed the circumstance of the inhabitants of this village and their domestic animals being infested with this kind of worm, had they not possessed a convenient spring of excellent water at a short distance, where, perhaps, they may get supplied with little trouble, and often, perhaps, with salutary exercise. It is remarkable that I never met with this worm until I resided in Somersetshire, and that since that time I have often seen them at the kennels, and other places, especially in the miserable animals employed in carrying coals from the pits to the neighbouring towns and villages. These animals are generally in the most wretched condition, and pick up their living, for the most part, from the road side, or from the hedges and ditches.

#### *Recipes for Worms.*

Take of oil of turpentine and olive oil of each half an ounce, and give carefully; and, three or four hours afterwards, one ounce of castor oil: oil of turpentine may be given mixed with castor oil to dogs of delicate constitutions, or that appear to have weak stomachs. Filings or fine scrapings of pewter have been found to destroy worms in dogs,—the dose should be about as much as will lie on a shilling. Calomel and jalap will expel worms from the bowels, especially if a little Ethiop's mineral, about a drachm, be given for three or four mornings or evenings previously.



*The Yellows.*

This disorder sometimes occurs in kennels, and is known, not only by a yellow tinge of the dog's eyes and mouth, but by being accompanied also by languor, sluggishness, loss of appetite, and costiveness. The remedies are, bleeding, a dose of physic, composed of 10 grs. of jalap, 4 of scammony, and 2 or 3 of calomel. If this does not operate in the usual time, give a table-spoonful or two of castor oil; and continue every three or four hours, until the bowels are sufficiently opened. After this the dog must be fed sparingly for some days, and then brought gradually to his usual diet. Exercise will hasten the operation of physic, but he must be carefully kept from cold water.\*

*Dropsy.*

This disorder is incurable, but may be alleviated sometimes by a dose of calomel and jalap; after which small quantities of tender animal food may be given; and small doses of salt, which will act both upon the kidneys and bowels, and at the same time promote digestion. It may be given with their food in sufficient quantity only to make it palatable. Tapping may afford some relief, especially in encysted dropsy.

\* This disease consists in 'an unhealthy state of the liver, often brought on by good living and little exercise. Mr. Blaine recommends "2 to 4 grs. of calomel with from 20 to 40 of aloes. The aloes to be repeated if necessary. To be followed by the following tonic alterative. Mercurial pill, 1 dr.; aloes, 2 drs.; myrrh, gum benjamin, balsam of Peru, of each 1½ dr.; to be divided into 10, 15, or 20 pills, and one to be given every evening."—ED.

## CHAPTER XXXVI.

## DISEASES OF THE CHEST, ETC.

*Inflamed Lungs.\**

THIS disorder is known by very quick breathing, hot and dry nose, redness of the eyes, and loss of appetite. The dog should be bled until he becomes faint; afterwards, a dose of calomel and jalap should be given, unless there are also griping pains and costiveness, then castor oil and

\* This disease is brought on by exposure to cold, or sudden change of temperature, and it appears sometimes as an epidemic. It is a very dangerous disease, often carrying off the animal in three or four days; its fatality being often owing to the fact of its not being discovered in many cases till the disease has made considerable progress. Its symptoms are quick and difficult breathing, the dog often elevating the head in order to breathe more freely; the appetite is lost, and the extremities are cold.

The *treatment* consists in bleeding extensively in the early stages, but if bloodletting is delayed beyond the second day it is injurious. Mr. Blaine lays down a useful rule with regard to the quantity of blood to be abstracted in this and other inflammatory diseases: — “For every pound a dog weighs, as far as eight pounds, he may lose half an ounce of blood. From that weight upwards he may lose a quarter of an ounce for every pound, unless it should be a very large dog, when the proportion should be less. The bowels should be opened by injections and the following medicine administered every four hours: —

Tartarised antimony	-	-	-	-	½ gr.
Digitalis	-	-	-	-	2 do.
Nitre	-	-	-	-	10 do.

for a moderate sized dog, and half the quantity for a small dog. The hair should be cut from the sides, and some blistering ointment rubbed in, taking care that the dog does not lick it afterwards. If vomiting is produced, the antimony should be omitted. The body should be kept moderately warm, but the air as cool as possible. — ED.

clysters will be proper. If this does not afford relief, rub some blistering liniment into the sides.

*Cough.\**

Dogs are subject to a troublesome cough, which often excites a kind of vomiting, causing them to throw up a little frothy mucus. It arises entirely from indigestion; they should therefore be fed accordingly; and, if they run about loose, they should be muzzled. If they become costive, a tea-spoonful of salt, dissolved in a little milk and water, may be given, or the bolus prescribed in a former chapter. A strong solution of salt, given as a vomit, sometimes affords relief.

*Asthma.*

Dogs are subject to a disorder similar to the asthma in the human subject, which is generally occasioned by an accumulation of fat, or by a frequent distension of the stomach by food, so that its capacity becomes increased, and a morbid or depraved appetite is the consequence. The only remedy for this complaint is abstinence, properly conducted, and feeding upon pure and easily digestible food, such as well boiled horse-flesh, or other animal food that has been hung a sufficient time to become tender: oatmeal gruel, made with milk, is excellent food for an asthmatic dog. Some opening medicine may be oc-

\* In the dog there are various kinds of cough; sometimes it is caused by worms, and is then attended by fetid breath and a staring coat. (See the article WORMS.) An asthmatic cough is peculiarly hollow, and is easily recognised. A cough generally accompanies distemper, and is then attended with a little frothy mucus. It may also proceed from a common cold, and is then frequent and distressing, or from inflamed or diseased lungs. — Ed.

casionally required, for which purpose the following pill may be given \* : —

Jalap and rhubarb, of each from 10 to 20 grains ; ginger, 3 or 4 grains ; soap, 10 grains ; water enough to form them into a bolus. One dose. To be given on an empty stomach, and the dog kept without food for two or three hours afterwards. No other medicine is required. The disease is incurable, and can only be thus alleviated. Should this dose prove insufficient to open the bowels, add 3 or 4 grains of calomel.

#### *Distemper.*

This is a disorder which attacks young dogs at different ages, from two months old to the time of their completing their growth. Most commonly, I believe, it appears between the third and sixth month. It is an affection of the mucous membranes, highly inflammatory at its commencement, and succeeded by excessive debility. The symptoms vary considerably according to the parts where the disorder predominates. If the mucous membranes of the nose are affected, there is a discharge from the nostrils and eyes, frequent sneezing, great heaviness, and want of appetite.

If the mucous membrane of the lungs be the principal seat of the disorder, there is a frequent cough, difficulty or quickness of breathing, discharge of frothy matter from the mouth, the cough exciting efforts to vomit, in which thin frothy mucus is thrown up. When these membranes, that is, of the lungs and of the nose, are much affected, there is, at the same time, a considerable determination of blood to the vessels of the brain, occasioning comatose symptoms, such as heaviness and sleeping, or delirium and

\* The best treatment of this disease consists in abstinence, and occasional purgatives and emetics.



fits. When the mucous membrane of the stomach is principally affected, there is sickness and vomiting of food, whether liquid or solid, as soon as it is taken in, attended generally with costiveness. And when the mucous membrane of the bowels is the seat of the disorder, there is diarrhoea, griping pains, and sometimes very severe fits. Through improper treatment those symptoms generally increase, and the animal sinks into an incurable state of debility. Some of stronger constitutions get over the shock, but are left in a state unfit for the sports of the field. I am inclined to recommend copious bleeding at its commencement, and a few grains of James's powder, and tying up the dog, giving him gruel or broth, thickened with oatmeal, for a considerable time. This must be continued until the mucous membranes are restored to health, and then he must return to his usual diet and exercise as gradually as possible.

We hear of many infallible recipes for this disorder, but seldom or never find them so on a *fair* trial. That I have recommended, if employed early and properly, is, I believe, the best. A seton in the neck is a good thing, especially when the eyes are much affected. The best method of preventing the distemper, or of rendering the attack less severe, is to keep the dog from too much animal food, and give him a little opening medicine when he is costive, such as jalap, or calomel, or both. When the eyes look red and dull, and the head heavy, this opening medicine is very useful. Young dogs, or puppies, should be kept from the water, especially such as are of tender constitutions. On examining several dogs that were affected with fits, weakness of the loins, or twitching of the fore-leg, I have uniformly found the small bowels more or less inflamed; sometimes in a considerable degree. From the contents of the stomach and bowels, it also appeared, that they had

been eating all sorts of trash, even straw or horse-dung. I have sometimes found the sheath of the spinal marrow inflamed.

There is no disease to which animals are liable, that presents to our notice such varied symptoms as the distemper in dogs: sometimes it is altogether mild in its attack; at others attended with the most dangerous characters. In all cases, however, there are certain general symptoms, such as a cough, and a discharge of mucus from the nose and eyes. It is, indeed, a specific inflammation of the membrane lining the nostrils and wind-pipe. In many cases the above symptoms may be nearly all that are present; in others we have purging, palsy of the limbs, or fits; and then the disease is much more formidable, from the brain and nervous system being affected. At first the dog fails in his feeding, looks dispirited, appears feverish, the nose being hot and dry. To this succeeds the nasal flux before spoken of.

Although this is a dangerous disease, yet it cannot be doubted, that numbers of dogs die from improper treatment. Some favourite nostrum, which in particular cases and particular stages of the disease, has been found beneficial, is prescribed for all cases, and the poor animal too frequently dies of the remedy, and not of the disease. Strong purgatives are often given with fatal effect, and other violent medicines are often administered, when from the disease so rapidly inducing debility, a cautious tonic treatment is demanded.

If the dog is in high condition, and the disease is discovered in its early stage, blood may be taken with advantage, but if the nasal discharge is considerable, we should be careful how we abstract the vital fluid.

Generally speaking there is costiveness in the early stages: this should be removed by a mild purgative, and

an emetic may be conjoined; from half a grain to two or three grains each of emetic tartar and calomel, according to the size of the dog, may be given on a little meat, or with milk. After this has ceased to operate, a pill may be given twice a day, composed of antimonial powder, from 2 to 4 grains; nitre, 5 to 10 grains; and digitalis, 1 to 2 grains. When the nasal discharge is considerable, and there is much weakness, the following tonic should be given:—gentian, 10 to 20 grains; ginger, 5 grains; cascarilla bark, 10 to 20 grains, twice a day. If there is purging or vomiting, from a quarter of a grain to 2 grains of opium may be added, till these symptoms cease.

If the discharge from the nostrils is offensive, a tea-spoon to a table-spoonful of yeast may be given daily. If fits occur, an emetic should be given at first, and followed by laudanum and sulphuric ether, 5 to 10 drops of each. A seton may also be inserted in the poll. In some cases the extract of belladonna, in doses of 4 to 8 grains, may be combined with the laudanum. If weakness or paralysis of the loins takes place, a seton may be inserted over the part. The dog should be kept tolerably warm, have plenty of nutritious food, with which he should be forced if he refuses it voluntarily; very little exercise is required, but great care and good nursing in every stage of the disease. The treatment of course must be modified according to the urgency of the symptoms that may be present at each stage of the disease. — ED.

## CHAPTER XXXVII.

## DISEASES OF THE NERVOUS SYSTEM.

*Fits.\**

THESE are generally a symptom of worms and obstructions in the bowels; they are often incurable, and can only be alleviated and kept in check by avoiding every thing which tends to determine too much blood to the brain. Costiveness, therefore, should be guarded against, and an abstemious diet is always proper. Violent exercise is very injurious, but such as is moderate is beneficial. A little opening medicine may be given occasionally.

*Rabies, or Canine Madness.*

Rabies or madness is a dreadful disease to which dogs are more liable than any other animal. It is produced

\* The dog is particularly liable to fits; they are frequently occasioned by distemper, sometimes by worms, at others by teething in young dogs, or pupping or suckling in bitches; and they are often idiopathic or unconnected with other disease. They are usually of an epileptic character, attended with champing of the mouth and a flow of frothy saliva, and spasmodic action of the muscles of the head. Sometimes the dog runs round in a circle, and the whole body is contorted. These symptoms often produce groundless alarm, being mistaken for *rabies*, but this disease is never attended by fits.

A little cold water thrown on the body will often remove the fit, after which tartarised antimony and chloride of mercury, from 1 to 3 grains of each, should be given; and after the operation of the emetic tonics should be given, such as

Gentian	-	-	-	-	10 to 20 grs.
Ginger	-	-	-	-	3     6 do.
Carbonate of iron	-	-	-	-	2     4 do.

according to the size of the dog. In obstinate cases a seton may be inserted on the neck; and nitrate of silver, from the eighth to the fourth of a grain, and spider's web half a grain, given in a pill once a day.—Ed.



by inoculation with the saliva of a rabid dog, and is usually communicated by means of a bite. It was thought that heat, hunger, and thirst, would produce the disease, but experiments have been instituted with a view of ascertaining this point, and these supposed causes have failed in producing it. In many hot countries, where dogs abound, the disorder is unknown. Though the disease is usually communicated by dogs to men and other animals, yet it has been ascertained that the saliva of other animals is capable of producing it. The period between the bite and the development of the disease is longer than with any other known poison, but it varies in different animals. In the dog the usual period is about six weeks, but it ranges from seventeen days to six or seven months. I have myself known it appear after a period of nearly six months. In horses the usual time is one to two months, but it has exceeded four months; in the ox it has appeared in three to six weeks; in the sheep from two or three weeks to ten; in man the usual period extends from three weeks to seven months. The duration of the disease also varies in different animals, though in all it has a fatal termination. In man it has run its course in twenty-four hours, and rarely exceeds three days. In the horse it varies from three to four days, and in the dog from four to six.

The *symptoms* of this disease in the dog have been frequently witnessed by the present writer, who can, therefore, attest the correctness of the following description, by Mr. Youatt, who observes :—"The earliest symptoms of madness in the dog are, sullenness, fidgettiness, continued shifting of posture, a stedfast gaze expressing suspicion, but when directed on the master, soon clearing up, and followed by some action indicating affection; an earnest licking of some part, on which a scar is generally found. If the ear be the affected part, the dog is incessantly and violently

scratching it; or if it be the foot, he gnaws it until the integument is destroyed. He gets into a passion with it, and growls over it; and is so insensible to pain, that he often mangles himself dreadfully. A disordered stomach and depraved appetite are soon manifested, and he picks up bits of thread, hair, straw, and other substances. The animal next becomes irritable, flies fiercely at strangers, mumbles the hand or foot of his master, is impatient of correction, quarrels with his own companions, hunts and worries cats, destroys his bed, gnaws and shakes his chain, and endeavours violently to escape. If he escapes he usually attacks those dogs only that fall in his way, but, if naturally ferocious, he will diligently and perseveringly seek his prey, and at length return home quite exhausted. The desire to do mischief is considerable, influenced by the previous disposition of the dog; it is often developed only by an occasional snap, and then only when purposely irritated. But, with the fighting dog the scene is terrific; he springs to the end of his chain, darts with ferocity at some object which he conceives to be within reach, and is eagerly employed in destroying every thing around him. The countenance soon becomes changed, the eyes have a peculiarly bright and dazzling appearance, sometimes distorted from the natural axis, and twitchings often extend over the whole face. About the second day, a considerable discharge of saliva commences, which, however, does not continue more than ten or twelve hours, and is succeeded by an insatiable thirst; the dog is incessantly drinking, or endeavouring to drink, and for this purpose eagerly plunges his muzzle in water. When the flow of saliva has ceased, he appears to be annoyed by some viscid matter in the throat, and in the most eager and extraordinary manner works with his paws at the corner of his mouth to get rid of it, and in the violent attempts frequently loses his

balance and rolls over. This forms a very striking symptom in this complaint, but the rolling over must be distinguished from the fits of epilepsy to which dogs are liable. In these fits the dogs will run round, stagger, and fall ; but this is not the case in rabies, for the animal never has fits. A loss of power over the voluntary muscles is now observed. It often begins with the lower jaw, which hangs down, and the mouth is partially open ; but by a sudden effort the dog can sometimes close it, although occasionally the paralysis is complete. The tongue generally becomes of a leaden hue, and although the dog can use it in lapping, the mouth is often unable to retain the water. He catches at his food with an eager and ill-directed snap, and often fails in his attempt to seize it, or bolts it unchewed, or drops it in the act of chewing. The paralysis often attacks the loins and extremities ; the animal staggers about, and frequently falls ; but previous to this, he seems in incessant motion, starting eagerly at some imaginary object, or spot in the wall, and scraping up his bed. He frequently, with his head erect, utters a short and very peculiar howl, so peculiar indeed, that it often enables a person alone to determine the nature of the disease. The breathing is always affected, being laborious, and attended with a grating choaking noise. Thus the poor animal continues for four, five, or six days, enduring and struggling with these complicated agonies, when he dies, sometimes in convulsions, but oftener without a struggle. It is a singular fact, that in the midst of this violent delirium, the voice of the master will often recall the animal to his senses. By the description which is here given, it will be seen that a variety of errors are entertained with regard to the symptoms of madness. There is no peculiar offensive smell attending the disease, as is generally supposed ; nor is there any wondrous instinct warning other dogs of the danger ; nor is

there any greater fear excited in them on the approach of a mad dog than of any other; and what is of more importance still, because it has so frequently led to the most fatal mistakes, *there is no dread of water whatever — no hydrophobia*. There is a great similarity in the symptoms of rabies in all animals. In the horse it usually manifests itself suddenly, the animal perhaps going out apparently well, and then all at once stopping, will tremble, paw, stagger, and fall. A state of the greatest excitation usually comes on, he kicks and plunges in the most violent manner, and then, perhaps, recognises his attendant, and becomes sensible to caresses. He must be approached with the greatest caution, for his disposition for mischief is often great; he will furiously seize and bite other horses as well as his attendant; and as Mr. Blaine well describes it, “will level with the ground every thing before him, himself sweating, and snorting, and foaming amidst the ruins.”

In the ox, the disease commences with dulness, loss of appetite, which is soon succeeded by a state of the greatest excitation, the animal bellowing incessantly, and tearing up the ground with his horns; there is, however, frequently but little ferocity displayed. There is a discharge of saliva in the early stage, and much thirst, but *no hydrophobia*. The eyes are anxious and protruded, the limbs become paralysed, and the animal dies in six or seven days. In the *sheep*, the character and progress of the disease is very similar to that of the ox, a disposition for mischief is manifested, and the animals will often butt at each other with great fury. In swine it is more varied, more frequently displaying the ferocious character, and often characterised by ludicrous antics. They snuff the air, gallop round and round, uttering a strange and shrill squeak.

The *rabid cat* is a most dangerous animal, excessively irritable, and at the slightest offence, imaginary or real, will seize the hand, or dart at the throat, using both nails and



teeth with dreadful effect. A friend of mine who was severely bitten by one, says it sprung upon him like a tiger. In the fox and the wolf the symptoms are very similar to the dog, the ferocious manifestations, however, being more uniformly and more virulently displayed.

A disposition for mischief is not manifested in every case of rabies in the dog, for there are two varieties of the disease, the dumb and the raging. The symptoms of the latter kind, which is the most common, and which is always exhibited by young dogs when they are affected with rabies, have been already described. Those of dumb madness, which is so called in consequence of no noise being made, are rather distinguished by a paralysed state of the muscles than an over activity. Sometimes this paralysis extends itself over the greater part of the body, and the dog rolls over, but is unable to walk. The indisposition for mischief often manifested in this variety must not, however, be depended upon, as the appearances are often very deceitful. There is generally a greater disposition to carry about the litter in this variety.

The appearances of the body of a rabid dog after death are very important, as on them an opinion is often formed, which may involve the safety of many lives. In the great majority of cases, the appearances of the body alone will enable us to decide with certainty, that the animal was or was not rabid, though this opinion will at all times be greatly strengthened by a knowledge of the symptoms manifested during life. In some cases we find the nervous system, the organs of respiration, and the intestinal canal, all presenting considerable exhibitions of disease, but usually one of these parts bears the brunt of the attack, and the others are affected in a minor degree. The brain and its membranes are often found in a state of inflammation as well as the spinal cord. This appearance, however, is not invariable, and is common to other diseases as

well. The lungs and the windpipe are often found in a state of inflammation ; but the larynx, the pharynx, and the back of the mouth, are still more frequently found in this inflamed state. It is this, indeed, which occasions the difficulty of swallowing, the thirst, and the alteration or suppression of the voice in the generality of cases. In almost all cases, the bloodvessels at the back of the epiglottis are found in a highly injected state.

The most certain criteria of the presence of the disease are, however, to be met with in the stomach. This organ is generally in an inflamed state, and in perhaps seven cases out of ten distended with indigestible materials, such as hay, straw, dung, and wood, which appear to have been swallowed by the animal in order to afford some relief by distending the stomach. In those cases where these objects are not found, there is generally a quantity of dark fluid resembling coffee grounds. Either of these appearances, accompanied by the previous existence of any suspicious symptoms, are quite sufficient to prove the nature of the malady. There is generally some degree of inflammation of the intestines, and I have seen in one case a long straw in the windpipe, reaching to the lungs, and sticking up into the mouth.

*Treatment.* With regard to a remedy for this disease, we have to observe, that, when once the symptoms have made their appearance, death is the inevitable result. The disease can, however, in almost all cases be prevented by the excision or cauterization of the bitten part, so as to remove the rabid saliva. If the part is conveniently situated, it may at once be excised by the knife ; but if the wound is lacerated, the lunar caustic will be best, as it can be cut to the shape of the tooth, and made to penetrate every part of the wound. If the knife is trusted to in such cases, it is possible it may not reach the extremity of the wound, or

the blood it produces may carry the poison still further. In many cases it will be most prudent to apply both the knife and cautery. The sooner this is done the better, but if several days and even weeks have elapsed since the bite, its total eradication will generally be still effectual; and, indeed, at no period prior to the manifestation of the symptoms should this measure be neglected. The poison is supposed to lie dormant in the part until a short time before the disease is developed, for one of the first symptoms is an itching of the bitten part. Such is the most prudent measure to be adopted in the human subject; and if a person that has been bitten adopts it, he may be assured there is little or no danger of becoming affected with the disease. Mr. Youatt has operated with the caustic in hundreds of cases with uniform success. If a horse has been bitten, the same course should be adopted, and the greatest care taken to examine every part of the body, in order that no bite may escape observation and treatment. In the dog not only should similar care be adopted, but if the animal is of sufficient value, he should be carefully tied up and made to undergo a quarantine of six months; and, if not of sufficient value to recompense the cost of this care, he should be destroyed.

As for the practice of dipping, it is worse than useless, as it is calculated, by exciting a false confidence, to prevent proper measures being adopted, and also, by the severity with which it is carried out, to produce considerable injury to the lungs—indeed, many lives have fallen a sacrifice to this absurd practice. The various secret medicines that have been most extensively advertised and employed, are worthy of no greater credit than that of dipping; some violent medicines have indeed succeeded in protracting the progress of the disease, but there is no well authenticated instance of a perfect cure.—ED.

## CHAPTER XXXVIII.

## MANGE.\*

THIS disorder is very common in dogs, and may generally be cured by rubbing in the following liniment, keeping them on a wholesome diet, chiefly of vegetable food, and giving them now and then a little opening medicine. The

\* Mange may either be produced by contagion, or it may be generated in the system, and may be caused by poor living, salt food, and exposure to filth. It appears to be constitutional as well as local, and requires internal as well as external treatment. There are several varieties of this disease; the red mange is attended by great redness of the skin, and requires at first cooling and depletive measures. Sometimes the disease appears with blotches, and sometimes with pustules.

The treatment of mange consists in the external application of sulphur, as in the following form:—

Powdered sulphur	-	-	-	4 oz.
Muriate of ammonia	-	-	-	$\frac{1}{2}$ oz.
Aloes, powdered	-	-	-	1 dr.
Venice turpentine	-	-	-	4 drs.
Lard	-	-	-	6 oz.—Mix.

To this an eighth part of mercurial ointment is often added with advantage, particularly in red mange. The ointment should be rubbed in once a day at first, and afterwards every other day. Previous, however, to its application, when there appears to be much local inflammation, as in red mange, this should be removed if the dog is fat by bleeding, physic, and cooling applications. After four applications of the ointment, the dog should be washed with soap and water. The following alternative may be given internally:—

Black sulphuret of quicksilver	-	1 to 2 scruples.
Supertartrate of potash	-	ditto.
Nitrate of potash	-	5 to 10 grains.

To be given as a pill morning and night.—ED.



mange is known by the dog almost constantly scratching himself, and by the skin appearing moist, and sometimes scabby. The dog should be well scrubbed with soft soap and water, or tobacco water, and well wiped with a dry cloth immediately after. When quite dry, apply the mange liniment, taking care to rub it well on every part. There is an obstinate kind of mange, in which the skin appears of a bright red colour, and sometimes scabby also. Here some internal remedies are required of the alterative kind, such as Ethiop's mineral, calomel, &c. Mange is sometimes extremely obstinate, and terminates in dropsy or consumption. I have lately found it a good plan to give the following powder every morning and evening, for a few days, before the liniment is rubbed in. Ethiop's mineral and levigated antimony, of each 20 grains; mix for one dose.

*Mange Liniment.*

Sublimed sulphur	-	-	1 oz.
Train oil	-	-	4 do.
Oil of turpentine	-	-	1 — Mix.

Stir the mixture well before it is used, and while applying it.

*Diseases of the Eyes.\**

Dogs are subject to inflammation of the eyes, which is generally caused by eating too much animal food, and by

\* Dogs are liable to several diseases of the eye: inflammation and ulceration of which is frequently produced by distemper, but its effects are generally removed with the cause; but sometimes ulcers form in the cornea, and considerably impede, and sometimes destroy vision.

In ophthalmia there is weakness of sight, flow of tears, blueness of the eyes, and sometimes opacity. The treatment should consist of bleeding, physic, and warm water fomentations to the eye, followed by cooling lotion, such as

violent exertion. A purgative of jalap and calomel should be given, and after that the dog should be kept on a spare diet. Eye washes, such as a weak solution of acetate of lead, of zinc, or sulphate of zinc, may also be employed in such cases. Old dogs sometimes become blear-eyed, and then a little vinous tincture of opium, or brandy and water, is a good wash for them, or one drachm of white vitriol dissolved in half a pint, or twelve ounces of water.

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Tincture of opium	-	-	-	$\frac{1}{2}$ a dr.
Superacetate of lead	-	-	-	ditto.
Distilled water	-	-	-	6 oz.—Mix.

When there is opacity of the cornea from external injury, a little calomel and sugar of lead, one third part of the latter to one of the former, may be put into the eye every day.

Ulceration of the eyelids sometimes takes place, and may be removed by an astringent wash or ointment. — Ed.

## CHAPTER XXXIX.

## LAMENESS AND INJURIES.

*Rheumatism.*

Dogs are very subject to rheumatism : sometimes its attack is confined to one limb, at others it becomes general, and ends in palsy. The loins, however, are more frequently affected than any other part.

The disease is produced by exposure to cold, and its attack may either be short in its duration, or exist for a long time, and leave its effects for life.

It is denoted by severe pain when the affected part is touched, and is attended either by pain and tenderness of the bowels or costiveness.

The dog should be placed in a warm bath twice a day, and the following medicine should be administered : —

Tincture of opium	-	-	20 drops.
Sulphuric ether	-	-	30 drops.
Castor oil	-	-	1 oz. — Mix.

(For a small dog half the quantity.)

To be repeated twice a day till the bowels are opened, and one fourth afterwards given twice a day. The affected limbs should be stimulated with compound soap liniment, or a mixture of hartshorn and oil. — ED.

*Strains.*

Dogs are sometimes strained, but it is an accident that does not occur frequently. If very severe, the dog

should be bled, have a little opening medicine, and then remain tied up, until he is perfectly recovered. If any part of the hind or fore-leg is inflamed and swollen, it should be fomented frequently. A low diet is proper. When strains have been neglected, and callous swellings have formed, in consequence, about the joint, I have seen firing do good; it should, therefore, be tried. The firing iron must be used with much care upon this animal, for the skin, which is very thin, should never be penetrated.

#### *Sore Claws.*

The best remedy is a poultice, or bathing them well with an old dish-clout, in warm greasy water. Afterwards the dog should be tied up until quite well, and take a purgative of jalap and calomel. If the disease does not submit to this treatment, wash the part with a solution of blue vitriol, 2 drachms to 6 or 8 ounces of water.

#### *Fractures.*

Dogs are very frequently the subjects of fractured limbs, which are generally occasioned either by blows or falls. In the majority of cases, however, if properly attended to, these injuries are perfectly cured.

The bones being set in their proper position, a linen bandage is to be carefully wound round the limb, which should be rendered straight and immovable by tow properly applied; the bandage must be carried down to the foot, so as altogether to prevent its action, as well as that of every other joint of the limb. Splints are better dispensed with than employed, as they are so liable to shift their position; but starch applied to the limb, and between the folds of the bandage, will be found highly useful, or gum will answer the same purpose. The dog should have a



light diet and be kept perfectly quiet for three or four weeks, by which time the bones will generally be united.

Dislocations are less frequent, but more serious than fractures, but they are often attended by fractures of the head of the dislocated bone. I have found the lower head of the humerus split and dislocated from the radius, and bent downwards, so as altogether to impede the action of the joint. If this can be discovered during life it is better to destroy the animal.

In simple dislocations, the bones being properly adjusted, the joint must be bandaged, and the dog kept perfectly quiet.—ED.

#### *Injuries of the Mouth from swallowing Bones.*

Dogs that feed much on bones, especially hard bones, are apt to have them stick about the mouth, and the jaw bones are sometimes considerably and incurably injured in this way. The means of prevention in this case are obvious, and should be attended to. When a bone is sticking in the mouth, it sometimes causes efforts to vomit, and the dog will be seen making ineffectual efforts with his paw to remove it. The easiest way of removing it is by the fingers, or a pair of forceps. When caries of the jaw bone has been thus produced, the diseased bone should be scraped with a small drawing knife, or other suitable instrument, and then a little tincture of myrrh should be applied, or a solution of alum, by means of a little lint wrapped round the end of a probe.

#### *Canker of the Ear.*

[This is a sadly troublesome disease to which dogs are subject. There are two varieties, internal and external canker. The former is most frequent with water dogs, and is often produced by the water, but assisted by good

living. There is at first a violent itching in the ear, which causes the dog to shake his head violently. An offensive discharge proceeds from the cavity; and sometimes the cartilages of the ear are so extensively affected as to render the disease incurable.

The ear should be gently syringed with warm water; and a lotion composed of sugar of lead 10 grs., white vitriol 5 grs., and distilled water 2 oz., poured into the ear moderately warm once a day. In some cases stronger remedies are required. Physic should also be given.

*External canker* is more curable than the former, and it is common to pointers and smooth-haired dogs. Its appearance is that of a sore and slit at the extremity of the ear, which, by itching, induces the dog to shake his head, and thus greatly increases the mischief. The best treatment is to cut or burn off the diseased part completely, and confine the ears by means of a cap embracing the head, having holes for the eyes, and tying under the throat and chin.

Sometimes the ear is considerably swollen, and a large abscess forms on the inside of the flap.

It may be poulticed and fomented at first, and when it points should be opened with a lancet rather extensively, and dressed with tincture of myrrh, and the ear confined as before directed. Physic will be useful. — ED.]

## CHAPTER XL.

## ON THE TRAINING OF SPORTING DOGS.

I HAVE often thought, that if training, or a suitable preparation, has been found essentially necessary for horses employed in hunting and racing, it is but reasonable to presume that it must be useful, if not essentially necessary, for dogs that are used for the sports of the field. In kennels where fox-hounds or harriers are kept, there is always one regular system observed with regard to feeding, exercise, and cleanliness; and as there are generally two men employed in a kennel where a large pack is kept, and these subject to the frequent inspection of the huntsman, any error that may occur is quickly discovered, and a suitable remedy provided. Besides, hounds, and especially fox-hounds, are of hardier constitutions than other dogs; whether this arises from the care that is taken in breeding, the country air in which the puppies are reared, or to the systematic management of the kennel, or to their being naturally a hardier race, it is difficult perhaps to determine. Hounds have certainly one advantage over the pointer, which is, that their employment is for the most part in cold weather, while that of the pointer often begins when the weather is very hot. I have been led to introduce these observations from having just seen a letter on the diet of the pointer in the *Sporting Magazine*, No. 76., New Series. It is signed Auceps, and proves that the writer is not only an experienced sportsman, but one of accurate observation



and sound judgment. As it is but short, I shall take the liberty of transcribing it.

“ If condition be necessary to the fox-hound and others of the canine species, whose services are required in the cooler months, and no dog can be in real condition without regard to diet, is it not indispensably so in an animal called on for the utmost exertion of his power, commonly under a burning sun, and even when the leaf of the aspen tree is void of motion? Yet, how often is the pointer taken into the field, even at the commencement of the season, either too low, or too weak for work, or as is, I think, more frequently the case, so full of flesh as to be incapable of action without visible distress! Servants are apt to think, that they recommend themselves by keeping pointers, as well as other dogs entrusted solely to their care and management, plump and sleek; so that, reversing the adage as applied to the horse ‘*it is (often) the master’s eye that makes the dog thin.*’ Independent, however, of the season of the year, and the effects of the atmosphere, to call forth the best powers of the animal, more attention is required to the feeding of pointers than most other sporting dogs. These creatures are particularly, nay, proverbially, ravenous; and as they require indeed more nourishment than most other dogs of their size, it is sometimes a difficult matter to regulate them in this respect. Gormandisers, as nine out of ten of them are, there is nevertheless a great constitutional difference in them. Giving to some no more food than may have been ascertained as conducive to condition, to a bystander unacquainted with the cases respectively, would appear cruelty, nay, downright starvation. Looking, however, to the result of things, under-feeding, as is the case with other dogs also, is much more advisable than over-feeding. No pointer can carry too little flesh, in the hotter part of the season especially, provided he retains his strength



and spirits : and, in order that he may have that little flesh firm and good, the due nourishment given him should be in as small a compass as possible ; and to complete him as to his wind, that golden rule should be observed, *a little and often*. From the sole consideration of their tendency to create heat, horse-flesh for the greater part, or barley meal as a chief ingredient, however advisable in more modified proportions in the cooler months, constitute the worst food for a pointer in September and the beginning of October. Milk and bread, whether regarding scent or continuance, appear from experience, not of myself only, but of many of the keenest shots, to be the best diet at the commencement of the season. Potatoes make the best succedaneum for bread, and are inferior to it only from the nourishment they afford being less condensed, or, in other words, occupying more room in the stomach. Having thus advised as to diet, I have to recommend, in order to the promotion of the best exertions of the animal, that a month before the commencement, and during the earlier part, of the season, at all other periods than during his exercise, the pointer be invariably tied to a moveable box, in an airy situation. The range of a pointer loosed from confinement is commonly far above that of one which is a stranger to restraint. Considering the ardour of shooters, and especially in the earlier period for sporting — considering also the care that is taken as to *breeding* and *breaking*, — it is surprising that so little notice is taken of what mainly conduces to their grand object, inattention to feeding being a chief reason why, of fifty pointers brought into the field, at the commencement of the season especially, scarcely one in a hundred is what he ought to be.

(Signed)

“AUCEPS.”

## CHAPTER XLI.

## DISEASES OF POULTRY.

THE disease most worth noticing in poultry is one which sometimes affects turkeys, and by which a great number are at times destroyed. Worms are sometimes found in the windpipes of turkeys and fowls.\* These worms appear

\* The disease to which poultry are mostly liable is in many places called the pip; in others it is termed the gapes. In both instances it is, I believe, owing to worms in the wind-pipe and bronchial tubes, and vast numbers in consequence die annually. It attacks young animals more particularly, and those generally about a month old. It commences with a cough, which increases till the bird gapes for breath. A writer in the *Veterinarian* for October, 1840, observes, "For the most part, those that are fat and in high condition are the first attacked; but they are soon cut off or dwindle away. On opening them, it is evident they have been destroyed by worms collected in the windpipe, of a peculiar sort, and each, on examination, appearing to have two tails; the neck and head being so small and long as scarcely, without the aid of a lens, to be distinguished from the other extremity. They stick like leeches to the side of the windpipe, and, when they get to a certain size, they suffocate the chicken by congregating in a mass.

"For eight years, I have tried all manner of means and different kinds of food, and every pretended remedy that I could hear of, but with variable and far from satisfactory success. I have done best with pills of sulphur, turpentine, and wheat flour; but these would only succeed when administered on the first appearance of the disorder, and even then no satisfactory reliance could be placed."

The above disease appears precisely similar to the hoose in calves; and a similar mode of treatment is most likely to be successful. Spirits of turpentine and lime water have been given with the best effects to calves, and the aid of these medicaments should be sought for in the winged race, taking care, however, to apportion the dose properly. Two drachms of oil of turpentine and an ounce of linseed oil will probably be a sufficient quantity for twenty chickens, or this quantity of

to be generated within the windpipe and its branches, as they sometimes are in calves and asses, and sometimes, but

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turpentine may be absorbed by flour and divided into twenty pills. This medicine may be administered every other day three or four times ; nutritious food being given at the same time. The following method may also be tried :—

A writer in the *Veterinarian* for May last, recommends the use of tobacco smoke for the cure of the pip, and says that he is informed by a farmer in Somersetshire that he adopts this treatment, and seldom loses a patient by this disease. “ He takes a common peck measure, places the chickens in it, and then covers it over with a cloth and blows the smoke of tobacco into it, which he does in the following way :— he gets a tobacco-pipe, and lights a little tobacco, which he places at the bottom of the bowl ; he then moderately fills the pipe, covers it over with a little coarse linen, and lightly blows from the opposite end of the pipe, after placing it in the peck ; when, of course, the smoke passes out of the bowl into the measure. He continues blowing until the chickens are almost lifeless. He removes them into the air, when they soon recover.”

In the same number of the *Veterinarian*, a French writer (M. Blavette) describes a verminous disease in fowls and turkeys, the seat of which, however, appears to be in the intestines. He states that he has known it prevail as an epidemic and destroy an immense number of pullets. He says, “ The prevailing symptoms of these winged bipeds were ceasing to lay, dulness, quick breathing, symptoms of pain, refusal of food, and frequent tremblings. On opening them, large quantities of worms were found heaped and twisted together in the intestines, near the gizzard and the anus. No less than thirty to forty worms were thus often found. The disease is usually observed in birds from six to twelve months old.

“ The *preservative treatment* to which I submitted them was the following :— I took three pints of water and put into it two handfuls of the leaves and tops of the common tansy, if the plant was green, or two ounces and a half when it was dried, and boiled them until reduced to a quart. I then added a handful of the summer savory, green or dry. These were suffered to boil together during three or four minutes, when they were taken from the fire, covered closely over, and left to infuse during three quarters of an hour. The infusion was then strained through clean linen, two ounces of honey were added to it ; and it was put aside for use. When I was called upon to attend a poultry-yard in which this verminous disease had appeared, I used to give to each

more rarely, in horses. These are all the diseases of poultry that I am acquainted with, except such as are produced by improper feeding: in all which cases, the means of prevention and cure are sufficiently obvious. The climate or temperature in which they are kept should always be suited to the nature or strength of their constitutions. I have known a turkey feed so greedily on peas, that he was nearly suffocated, and must soon have died, had not an opening been made in his crop with a penknife, and the peas taken out. The crop was sewed up again, and the bird perfectly recovered. Attention to feeding, and the

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of the young birds two spoonfuls of this tisane before they had the opportunity of getting any food, and also before their supper. They likewise had a little increased allowance of wheat and barley; and care was taken that they had access only to pure water. This was continued during six or seven days, at the expiration of which time a marked change had taken place in their appetite and appearance. They were more eager for food; their feathers lay smoother; and every symptom of illness had vanished. They were then put with the old birds, and treated in the ordinary manner.

“*Curative treatment.*—The birds in which symptoms of the disease, more or less alarming, had appeared, were treated in the following manner:—I took of the roots of common brake (*Pteris aquilina*) dried, and of the leaves and summits of tansy (*Tanacetum vulgare*), also dried, three ounces, and boiled them in three pints of water, adding to the decoction a good handful of summer savory (*Satureja hortensis*), dried. These were boiled five or six minutes, and then covered closely, and left to infuse during an hour; and afterwards strained, as before described, through linen. A sufficient quantity of barley or rye flour to form a somewhat thick paste was then added to this liquor. Divide this into pills or pellets of an oblong shape, and keep them for use. Each of the birds should be made to swallow, morning and night, three of these pellets of the usual size for fattening, having been first dipped in honied water for the convenience of giving. They are also made to swallow, after every meal, a spoonful of the tisane, which was given under the prophylactic treatment. The quantity of the paste was likewise a little increased every day. At the expiration of this period, the birds had generally recovered their pristine appetite and gaiety: the medicine was then omitted, and they returned to their companions.”—Ed.



state of the digestive organs, will be found as advantageous in poultry as it is in other domestic animals. It is probable that opening medicine would sometimes be of use to them; but what would best answer this purpose, or what mode of feeding is most profitable, can be determined only by experience. Grass, perhaps, is a good purgative, and bruised or powdered grain better than whole grain. Cooping may be found at times rather an impediment to fattening, especially in birds that have been accustomed to liberty. Solitude may also be injurious: cheerfulness in all animals contributes much towards healthy digestion: therefore, even poultry should be treated with kindness, and their comfort should be attended to. I have seen ducks and fowls so affected with palsy, that they were incapable of standing. This has been attributed in some instances to the gravel they had swallowed, having been brought from a place near the lead mines. Certain it is, that a great number of poultry, as well as other animals, have been at times destroyed in the parish of Wookey, near Wells, after heavy rains had caused the brook which runs through the village to overflow its banks; and that the lead mines on Mendip are in some way or other the cause of the mischief. But I have seen it happen in situations where there was no reason to suppose that lead ore, or any preparation of lead, had been swallowed. In two that I have opened I found gravel of an unusually large size in the gizzard, and some of it beautifully polished, appearing as if it had been there some time. I have known poultry relieved, and even cured, when labouring under some internal disorder, by taking two or three pepper corns.

## CHAPTER XLII.

GENERAL OBSERVATIONS ON FATTENING CATTLE, AND  
OTHER DOMESTIC ANIMALS USED AS FOOD.

It is considered as an established fact, that cattle of a certain form will fatten more readily than others; and the form most desirable is a wide, deep, and capacious chest, small head and legs, the tail fine, and going off nearly in a line with the back. There are other points well known to butchers and graziers, but not easily described. The capacious chest is favourable to easy breathing, and easy breathing is thought to conduce towards easy digestion\*; and it is almost superfluous to observe, that the nearer the digestive process approaches to perfection, the more speedily will the animal become fat. A disposition to fatness may be greater in some breeds than in others, but it is reasonable to infer, if we are allowed to depart at all from the path of experience or actual trial, that breed-

\* The larger the chest the greater is the capacity afforded for the purification of the blood, without which the system cannot be supplied with that quantum of nutriment necessary for the production and increase of flesh and fat. This is one reason why a capacious chest is necessary, in order that there may be a disposition to fatten; another is, that when the chest is round and capacious, the abdomen is so likewise; for the ribs form the anterior part of its roof, and the processes of the lumbar vertebræ, which form the other parts, correspond in their shape and extent with the ribs: there being a larger space thus afforded, the bowels and stomachs are more capacious; and thus a greater amount of surface is afforded for the proper absorption of the chyle, or nutritive fluid, and the food is not hurried off, as in light-gutted animals, until the processes of digestion and assimilation are properly completed. — Ed.

ing from healthy parents is a circumstance of the greatest importance, and the first step towards improvement in breeding and grazing. In breeding milch cows, it is known to be of importance to cultivate the temper or disposition, for it has been found that cows of a quiet, gentle temper produce more milk, and yield it more readily, than such as are of a contrary disposition, supposing them to be alike in all other circumstances. The quantity and quality of the milk must depend much upon the facility and perfection with which the food is digested. When the cow is suffered to go dry, instead of milk, we have an increase of muscle, or flesh and fat, and of all other parts, but chiefly of the two former, and especially the second.

Quietness of temper, then, may be considered as a desirable circumstance in animals designed for grazing. In cultivating the temper we cannot begin too early, and, by so doing, we render young steers more docile and tractable, when wanted for the plough or other labour. This good disposition should be carefully cherished, while they are employed in the labours of agriculture, by kind and humane treatment. Such management will enable them to do their work better, and with more ease; they will also be less liable to disease, and their food will do them more good, and give them more muscular power. When put up for grazing, they will be found to fatten more quickly than such as are of a different temper or disposition. When the disposition of young steers that are wanted for the plough is found to be bad and troublesome, they should be corrected with care. The most patient and steady men will be found most capable. It was well observed by Lord Pembroke, in his excellent work on Military Equitation, and Breaking of Horses, that whenever he saw a rider in a passion with his horse, he was sure to find him more to blame than the animal. It is astonishing what advantage



is obtained by attending to the disposition of colts, even from the time of weaning. It must be admitted that there is a great difference in the natural disposition of animals; but gentleness and docility are in a considerable degree hereditary, which is a circumstance that should always be attended to in breeding. It may be safely laid down as a general rule, that a man of a hasty, impatient, or passionate temper is an unfit person to correct the temper of young animals; a man of a cruel disposition is still more unfit. Such an employment requires patience, evenness of temper, and perseverance. As to the food most profitable for fattening cattle, there cannot be a doubt, I believe, that grass is the best, provided they are not put too hastily into rich pasture; inattention to this circumstance, or, as it is termed, forcing cattle too much, is the cause of serious disorders. The practice of tying up or stalling working cattle is bad; they are hardier, and have more muscular power, when suffered to exercise themselves and pick up a little green food in the fields. It is a false or mistaken economy to keep them on unwholesome food, such as bad hay; it reduces their muscular power, and does considerable injury to their digestive organs. Next to good grass, good hay is the best food for them; that is, hay that has been made early, is of a light green colour, fragrant, and full of herbage. Hay that has been made late, is stalky, dry, and fibrous, is greatly deficient in nutriment, and difficult of digestion. That which has been soaked by the rain has had most of its nutritive juices washed out of it, and what is left consists, in a great measure, of indigestible fibres. Hard stalky hay that abounds in docks and thistles is apt to injure the gums and grinding teeth, and thereby render rumination painful and difficult, and consequently imperfect. When young stock are put up for fattening, it is of importance that they should be healthy, and especially that the



digestive organs should be so. When they are otherwise, the best thing to be done is to turn them into a bare, but sweet pasture, and keep them there a considerable time. The stomachs will then acquire strength, and the digestive power will be restored. With regard to stall feeding, it is a subject that requires careful consideration, and I think it likely that the method often adopted will admit of improvement. I have known several beasts destroyed by feeding on potatoes, at a time when potatoes were remarkably cheap, and, on that account, given too freely. Bad or indifferent hay should never be given. Oats should always be bruised; when given otherwise, and especially when given alone, they are difficult of rumination and digestion, and I have seen them prove quite indigestible, and productive of a serious disorder, which required an opening drench, and a clyster of salt and water. In two cases the oats were discharged by means of the opening drench, almost unchanged, and not soft and swollen as they are often found in the dung of horses. After this, the cows quickly recovered. Previously to fattening a milch cow, she should be kept for a considerable time in bare pasture, after which she will fatten more readily than she otherwise would, and be much better meat. When cattle are stall-fed, it would be a good plan to give them an opening drench occasionally; and, if they appear dull and heavy about the eyes, some blood should be taken off. A little exercise now and then would promote digestion, and tend to the preservation of health. Habit, however, has great influence in reconciling animals to such confinement, and they are not so often hurt by it as may be expected. Habit has the same influence in reconciling the stomach to potatoes, bruised beans, and other food, which, unless given at first sparingly, and with care, would prove very injurious. In fattening calves from the pail, the milk cannot be too fresh; for it becomes less easy

of digestion, and less nutritious, in proportion to the time it is kept. When the milk cannot be had quite fresh, or when the calf seems indisposed and loose in the bowels, a little powdered chalk may be added to it. Too much milk is sometimes given at a time, by which the stomach is oppressed, and digestion interrupted. A little abstinence is useful on such occasions.

I have seen lambs fattened in December, by keeping several of them together within doors, and bringing the ewes to them to be sucked morning and evening, or three times a day. In the intermediate time they had placed before them small troughs containing barley or oatmeal, mixed with a little powdered chalk. They were thus fattened in a short time, and made excellent meat. The ewes should be allowed the very best hay, with the best grass they can get.

In fattening pigs there does not appear to be much difficulty, and the only thing thought necessary is to give them as much food as they can eat. It is as necessary, however, in this, as in other animals, to keep the stomach in a healthy state, for if this vital organ is disordered, the most nourishing food will do them no good.\*

The most profitable pigs for the farmer are such as will

\* Cleanliness is of much importance in the fattening of cattle; not only do milch cows thrive much better when the skin is curried and cleaned daily, but cattle, when put up to fatten, derive much benefit from the practice; there being an intimate sympathy between the skin and the digestive organs. The same plan, too, has been advantageously tried with pigs, as the following experiment by a gentleman in Norfolk shows:—"Six pigs of equal weight were put to keeping at the same time, and treated the same as to food and litter for seven weeks. Three of them were left to shift for themselves as to cleanliness; the other three were kept as clean as possible by a man employed for the purpose with a curry-comb and brush. The last consumed in seven weeks fewer peas by five bushels than the other three; yet weighed more when killed by two stones and four pounds upon the average."—ED.

live and thrive at grass. These possess great energy of stomach, and make excellent pork. Pigs have generally too much food given them at a time, and that too liquid. Potatoes and skimmed milk make an excellent diet for them, if given carefully, that is, a little at a time. I have known a spayed sow that was very poor made fit for exhibition at the meeting of the Bath Society, in three months, on this food. There is great variety, however, in the digestive power of these animals; some of them fatten quickly on food that would not do so well for others. But whenever the stomach appears weakly, and they do not seem to thrive, the best plan is to turn them to grass for a short time, and feed them afterwards with great care. Pigs have been often *blasted*, as it is termed, and have died in consequence, by giving them too much sweet whey at a time; too much milk or potatoes is liable to produce the same effect. Greedy or voracious pigs are not the most readily fattened, and if not restrained or limited in food, and especially in the articles I have just mentioned, are very liable to indigestion, or flatulent colic, which may produce inflammation of the bowels, or suffocation. When pigs that are put up for fattening do not appear to feed well and thrive, one drachm of powdered antimony should be given daily in their food.

## CHAPTER XLIII.

## OPERATIONS.

*Bleeding.*

IN all inflammatory disorders bleeding is of the first importance, and cannot be performed too early. A careful observer is often able to perceive the approach of inflammatory disorders, and by bleeding, and change of pasture, prevent them. When bleeding is necessary, it should generally be done freely. One copious bleeding, that is, until the pulse sinks, will frequently crush the disorder at once; whereas, several lesser bleedings will only keep it in check for a time, till at length it becomes changed into a chronic complaint, or terminates in dropsy. From one to two gallons of blood may generally be taken from a heifer or steer, or even from a milch cow. The quantity, however, should not be so much regarded, as the effect it produces on the animal. I have seen a heifer reel after bleeding, and fall down from faintness; after lying some time she got up, and appeared panting and trembling, but soon recovered perfectly without taking any medicine, except a little whey. In severe wounds, bruises, or other accidents, the animal should always be bled freely. Local, or topical bleeding, as it is termed, is useful, in that kind of foul in the foot, or low, which is attended with painful swelling, and a high degree of inflammation. In this case, the vein, or even the artery that goes to the claw, may be opened; or the animal may be bled in the toe with a draw-



ing knife, as is done in horses.\* Sheep are commonly bled by cutting the tail or ears, or by making an incision in the nostril. When the head is affected, they are bled in the eye vein, but from neither of these parts can a sufficient quantity of blood be obtained, or at least very seldom: therefore, it should never be practised. Sir George Mackenzie, in his *Treatise on Sheep*, advises bleeding in the submaxillary vein, which passes over the angle or edge of the under jaw bone; but, as this vein is closely accompanied with the submaxillary artery, and the excretory duct of the great salivary gland, situated under the ear, the operation is hazardous. Sheep should always be bled in the neck vein, with a small fleam, or lancet. The neck should be corded, and the operator, having placed the animal between his legs, should keep the head on one side, in order to put the vein on the stretch. In this position it is easily opened, either with a fleam, or lancet, after removing the wool, but there is no occasion for cutting away any wool. I have seen a whole flock of sheep bled very quickly in this way, and I have bled them myself both with a fleam and lancet. The quantity of blood taken from this flock of sheep was one pint each. Two or three of them fainted, but recovered in a few minutes. Dogs are bled in the same manner, and may be bled to faintness without danger. Pigs are bled by cutting the ears or tail, or roof of the mouth. And if sufficient blood cannot be thus drawn, they should be turned to grass, and have no other food for a few days.†

\* The artery lies in the back part of the leg, and may be opened at the heel. The vein is in front, and may be opened just above the division of the claws. — ED.

† The vein inside the leg, a little above the knee, presents a favourable situation for bleeding in swine. — ED.

*Drenches, or Draughts.*

[In this form medicines are usually administered to cattle and sheep. Balls will generally be found unsuitable, as they pass at once into the rumen, which is not sensible to their influence. Drenches should be given carefully and slowly, so that they may enter the true stomach. The usual plan with oxen is to seize hold of the nostril with the left hand; but this is very objectionable, as it irritates the animal, and there is some danger of the medicine entering the windpipe. The following plan, recommended by Professor Dick, is preferable. The operator should pass his left arm under the cow's jaw, and take hold of her left cheek with two of his fingers, and with a horn, or bottle, pour the liquid into the right side of the mouth with his right hand, giving both the tongue and jaws as much liberty as possible. An assistant should steady the head, and assist in keeping it moderately high by taking hold of the horns.

Drenches may either be given with a horn, or a bottle, or a copper or tin utensil made for the purpose. Sheep are best drenched by means of a bottle; and dogs either with a spoon, or a little pewter vessel made for the purpose.—ED.]

*Clysters.*

These are too much neglected in the diseases of horses, and still more in the complaints of cattle, though they are of great use in both, and, even if employed unnecessarily, cannot do any harm. When an animal is *blasted*, as it is termed (see *Blasting*), the stimulus of the salt water which forms the clyster is propagated upwards, even to the stomachs, and greatly assists in the discharge of the

confined air, as well as of any indurated excrement there may be in the bowels.

The only clyster necessary for this purpose is a solution of common salt in water; half a pound of salt to four or five quarts of water. And I would advise every proprietor of cattle to be provided with a clyster pipe, with a large bullock's bladder firmly tied to it.\* Before the bladder is tied on, it should be soaked a few minutes in warm salt water; it should then be rubbed dry with a cloth, and when tied on to the pipe, it should be blown, and the air confined by corking the mouth of the pipe. In this way the same bladder will last a considerable time.

*[Setons and Rowels*

may either be inserted in the same manner as in the horse; or a portion of the root of black hellebore may be inserted underneath the skin in cattle: this quickly occasions the formation of matter. In the dog, a seton may be quickly inserted by taking up a portion of skin with the finger and thumb, and at once passing the seton needle armed with tape through it.—ED.]

\* Read's injecting apparatus, as before noticed, is by far the best mode of administering clysters; but, although they are useful and should not, therefore, be neglected, yet, as costiveness in cattle is generally owing to the complicated structure of the stomach where an effect cannot be produced by clysters, their utility is, therefore, by no means so great as in the horse. In dogs, however, they are exceedingly useful, and are best administered by means of a small pipe and a pig's bladder.—ED.

## CHAPTER XLIV.

A LIST OF THE MEDICINES CHIEFLY EMPLOYED IN CATTLE,  
SHEEP, AND DOGS.

## ALOES

Is by no means a desirable purgative for cattle: though sometimes given, it cannot be depended on. The dose is about two ounces, given in solution, with some carminative. For dogs it is a safe and judicious purgative, though comparative large doses are required, viz. \* from half a drachm to three drachms, according to the size of the dog, and frequently combined with a few grains of calomel.

## ALUM

Is sometimes used as an astringent internally for diarrhoea, in doses of two drachms, dissolved in a pint of hot milk, for cattle, and sometimes combined with opium and ginger. It is more frequently used as an astringent wash for the mouth.

## ANTIMONY.

*Tartarized antimony* is used as a febrifuge in inflammatory diseases in cattle, the dose being from a scruple to a drachm and half, often combined with digitalis and nitre.

In the dog it is a powerful and useful emetic, the dose being from one grain to four.

Mixed with lard, it makes a highly stimulating ointment.

\* From the great variety in the size of dogs, their doses require a considerable range; the weaker dose must be considered as intended for a small, and the stronger one for a large, dog.



*Antimonial powder* is used as a febrifuge and sudorific, in the dog; the dose being from two grains to eight.

*Butyr*, or *chloride of antimony*, is a useful caustic applied externally, particularly in the foot-rot in sheep.

#### ASTRINGENTS.

Medicines which remove diabetes and diarrhœa; such as opium, catechu, prepared chalk, &c.

#### CALOMEL

Is not frequently employed in cattle; it is most useful in dysentery and diseases of the liver, in doses of half to one drachm, combined with opium.

In the dog, it is both a purgative and an emetic; and is given, as the former, in doses from half a grain to eight grains, alone or with aloes: it should be given with caution.

#### CAMPHOR.

A sudorific and febrifuge, seldom used for cattle,—more frequently for the dog. Dose, for the former, half a drachm to two drachms; for the latter, two to six grains.

#### CARAWAY SEED.

A cordial and stomachic, though inferior to ginger. Dose, from half an ounce to two ounces in cattle.\*

#### CASTOR OIL.

A purgative, employed both in cattle and dogs: for the former the dose is a pound; and for the dog, half an ounce to an ounce.

\* Where the doses are not specified for sheep, it must be understood that they require about one sixth the quantity prescribed for cattle.

## CATECHU.

An useful astringent often combined with opium and chalk. Dose for cattle, two drachms.

## CATHARTICS.

See PURGATIVES.

## CHALK, PREPARED.

An astringent and antacid, useful in diarrhœa. Dose, from one to four ounces, in the ox.

## COPPER, SULPHATE OF, OR BLUE VITRIOL.

A mild caustic, externally applied ; internally, a tonic, in doses from half a drachm to four drachms in cattle : it is useful in chronic discharges from the nostrils.

## ACETATE OF COPPER (VERDIGRIS).

Used externally as a caustic and stimulant to ulcers, and is often combined with digestive ointment.

## CORDIALS.

Medicines which promote strength by stimulating the stomach and intestines ; such as ginger, allspice, gentian, caraway seed, &c. : they are much required for cattle.

## CROTON SEEDS.

A powerful purgative, useful in obstinate constipation. Dose, from ten to forty grains of the seed or even more, or from ten to forty drops of the essential oil, in cattle. It has been principally employed in puerperal fever.

## DIGITALIS, OR FOXGLOVE.

A febrifuge, often combined with emetic tartar and nitre. Its effect is to reduce the frequency of the pulse, which it

often renders intermittent. The dose in cattle is from a scruple to a drachm, once or twice a day. In the dog, from one to three grains.

#### DIURETICS.

Medicines that excite the kidneys, and increase the secretion of urine; as nitre, resin, turpentine. They are less employed in cattle and dogs than in the horse.

#### EPSOM SALTS, OR SULPHATE OF MAGNESIA.

A valuable purgative in cattle. Dose, from half a pound to a pound and a half. In the sheep, from one to two ounces.

#### ÆTHER, SULPHURIC.

A powerful antispasmodic and stimulant, employed in hoose and colic. Dose for cattle, half an ounce to an ounce. For dogs, from seven to fourteen drops.

#### ÆTHER, NITROUS.

A febrifuge and sudorific, employed in fevers and inflammatory diseases when debility is present, or the system requires rousing. Dose, from two drachms to an ounce; for the dog, ten to twenty drops.

#### FEBRIFUGE.

Medicines which reduce fever. Nitre, emetic tartar, and digitalis are employed for this purpose.

#### GENTIAN.

An useful vegetable tonic. Dose, from two to eight drachms in cattle, one drachm for sheep, ten grains to a scruple or more in the dog. It is generally given combined with ginger.

## GINGER

Is the best cordial and stomachic. Dose for cattle, from one drachm to four; for sheep, half a drachm to a drachm; for the dog, from two grains to five.

## GUM ARABIC.

A demulcent, sheathing the coats of the bowels. Dose for cattle, from two drachms to an ounce; and for the dog, from ten grains to a scruple.

## HARTSHORN, SPIRIT OF.

Generally used with oil as an external stimulant, but sometimes employed in the dog as a stimulant internally. Dose, from seven to fourteen drops.

## HELLEBORE, BLACK.

Used as a plug or seton, inserted in the dewlap, where its stimulating qualities produce a copious discharge of pus.

## HELLEBORE, WHITE.

Sometimes given as a sedative in inflammation of the lungs in cattle. Dose, a scruple.

## IODINE

Is employed both externally and internally to reduce glandular and other swellings, and particularly in indurated udder. One part may be rubbed down with seven parts of lard to form an ointment, which may be used daily.

## IODIDE OF POTASSIUM

Is a still better form, and may be used in an ointment as above, or given to cattle in doses from four to eight grains, either to remove these swellings, or to prevent con-



sumption in cows when this disease is threatened. It may also be chemically combined with mercury, and thus used as an ointment.

IRON, SULPHATE OF.

A tonic, in doses of two to four drachms in cattle, combined with gentian.

LAUDANUM, OR TINCTURE OF OPIUM.

A valuable antispasmodic. Dose, an ounce in cattle. In the dog, from ten to forty drops.

LEAD, WHITE.

An useful application to the fly in sheep, when sprinkled over the part struck.

SUPERACETATE OR SUGAR OF LEAD.

Generally used for cooling lotions, and particularly for the eyes, and sometimes in an ointment of the same nature.

LIME.

Chloride of lime is chiefly valuable as a disinfectant either applied to the body, or the stable, or cow-house. Half an ounce of the powder may be dissolved in a gallon of water, and may be thus applied with advantage to unhealthy ulcers, and every disease attended with a foetid smell. In this form the walls may be washed with the solution when infection is feared. It has been given internally for the hoove in cattle, in doses of two drachms.

LINSEED,

When boiled, forms an excellent emollient and demulcent for internal use; and linseed meal makes an excellent poultice.

## LINSEED OIL

Is a safe and useful purgative for cattle, in doses of a pint to a pint and half if given alone, or in smaller doses if combined with salts.

## MYRRH.

Generally employed in the form of tincture, as an external application to wounds. In the dog it is sometimes given internally as a tonic, in doses of from five to ten grains.

## NITRE, SALTPETRE, OR NITRATE OF POTASH.

A cooling diuretic, useful in fevers and inflammatory diseases. Dose for cattle, two drachms to an ounce; and for sheep, half a drachm to a drachm. For the dog, the dose is from two grains to ten.

## OPIUM.

A valuable antispasmodic, astringent, and sedative, useful in both colic, diarrhœa, and inflammation of the bowels. It relieves pain sooner than any other medicine: — the dose is, for cattle, about a drachm, in the form of powder dissolved in water or gruel; and, when made into a tincture, the dose is an ounce, as before observed.

In dogs, the dose is from an eighth of a grain to two grains, or from ten to forty drops of laudanum.

## POTASH, SUPERTARTRATE OF (CREAM OF TARTAR).

A cooling alterative and aperient. Dose for cattle, from two to six ounces; in the dog, from ten grains to twenty.

## PURGATIVES.

Medicines which, by exciting the internal coats of the stomach and bowels, produce purging.

All animals possess some peculiarity in the intestines, which renders them more susceptible to the action of one medicine than another. Thus aloes readily excites the intestines of the horse, while the neutral salts have little effect; and in cattle we notice an opposite effect from these agents. In the dog purging is produced by a small dose of calomel, but a large dose of aloes is necessary, whilst the reverse of this is found in the horse. Cattle require very large doses of purgative medicine, and generally combined with some stimulant, such as ginger. The following will be found useful forms for general purposes:—

Sulphate of magnesia	-	-	12 oz.
Sulphur	-	-	4 oz.
Powdered ginger	-	-	2 drs.

Dissolve in a quart of warm water.

Or,

Sulphate of magnesia	-	-	$\frac{1}{2}$ lb.
Sulphur	-	-	2 oz.
Powdered ginger	-	-	2 drs.

Dissolve in a pint of warm water.

Then add

Linseed oil	-	-	12 oz.
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Where any strong purgative is required, from ten to twenty grains of croton seed may be added to the above, or fifteen drops of croton oil. Sulphate of soda may be substituted for the magnesia, but is rather objectionable from requiring a much larger quantity of liquid to dissolve it.

There are various purgatives used for dogs; the best, perhaps, for general purposes, is from half a drachm to two or three drachms of Barbadoes aloes, with a few grains

of calomel and a little ginger, according to the size of the dog.

Calomel is sometimes employed alone, but it is more likely to act as an emetic. When a mild purgative alone is required, castor oil may be used, or, what is still better, the following mixture : —

Syrup of buckthorn	-	-	-	1 oz.
Castor oil	-	-	-	1½ oz.
Syrup of white poppies	-	-	-	½ oz.

Dose — a table spoonful for a moderate-sized dog.

#### RESIN.

A diuretic. Dose, in cattle, three to six drachms.

#### RYE, ERGOT OF,

Has a peculiar effect on the uterus, stimulating it to contract, and is thus employed in protracted parturition when the labour pains are subsiding. The dose for the cow is two drachms, repeated several times, with intervals of half an hour. It should be employed with caution.

#### SULPHATE OF SODA, GLAUBER'S SALTS.

A common and useful purgative for cattle, in the same dose as Epsom salts, than which, however, it is less convenient, from requiring a large quantity of water to dissolve it.

#### SALT, CHLORIDE OF SODIUM.

In moderate quantities, a tonic and stimulant ; in larger ones, a purgative and vermifuge. Dose for cattle, four to six ounces. In sheep it has been advantageously employed in the rot, and is a promoter of condition in moderate doses ; and, in larger ones, a useful purgative.



## SILVER, NITRATE OF (LUNAR CAUSTIC).

A valuable though expensive caustic; it is the best application to the bite of a rabid dog.

## SULPHUR.

A useful purgative, in doses of half a pound or twelve ounces; or in smaller doses with Epsom salts. In sheep, the dose is one to two ounces. It is also used externally, as an application for the mange, both in cattle and dogs, and is also employed internally, as an alterative, for the same disease. Dose for the dog, from one to two scruples, generally combined with cream of tartar.

## TAR

Is employed with advantage to external injuries of the horns and feet.

## TONICS.

Medicines more permanent in their effects than cordials : — sulphate of iron and copper, cantharides, bark, and gentian.

## TURPENTINE, COMMON.

An ingredient in digestive ointments, and internally a diuretic.

## OIL OF TURPENTINE.

An irritant externally; internally a diuretic, and antispasmodic, and vermifuge. The dose, in cattle, is from one ounce to four, but it should be given with linseed, or other oil. In the dog the dose is from two to four drachms.

ZINC, SULPHATE OF (WHITE VITRIOL).

An astringent, used in the form of a lotion.

For the dog it is sometimes employed for canker in the ear, and also for the eye. Twenty grains will be sufficient for four ounces of water, when thus employed; but when used for wounds or ulcers it should be stronger.

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For a more lengthened description of the foregoing medicines, the reader is referred to the *Materia Medica* at the end of the work on the diseases of the horse.

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\*\* In the following Index the diseases of each animal are separately arranged.

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